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Agriculture



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In cooperation with
United States Department
of Agriculture, Forest
Service; Washington
State Department of
Natural Resources;
and Washington State
University, Agricultural
Research Center

Soil Survey of Kittitas County Area, Washington



How to Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

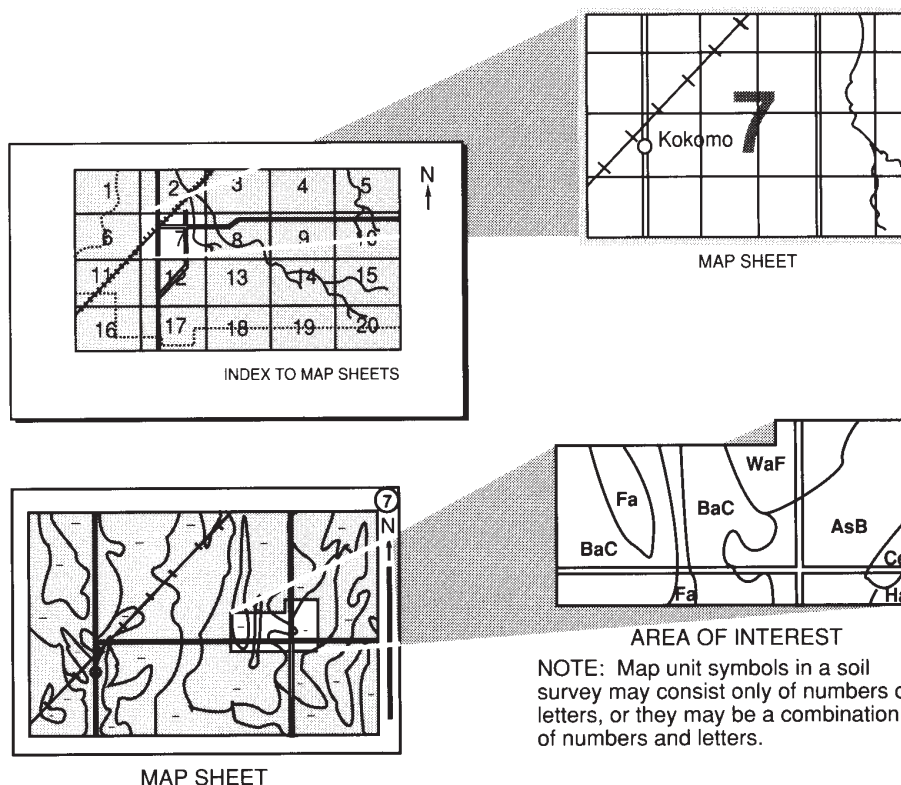
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service and the United States Department of Agriculture, Forest Service; Washington State Department of Natural Resources; and Washington State University, Agricultural Research Center. The survey is part of the technical assistance furnished to the Kittitas County Conservation District.

Major fieldwork for this soil survey was completed in 2000. Soil names and descriptions were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2003. The most current official data are available on the Internet.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover Caption

View looking south toward Manastash Ridge, in the southeastern part of the survey area. Mitta and Opnish soils are on fan skirts and alluvial fans in foreground, Selah and Terlan soils are on fan remnants and alluvial fans in center, and Rollinger soils are in pockets of loess on hillslopes at the base of the ridge.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at <http://www.nrcs.usda.gov>.

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Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Soil surveys are designed for many different users. Farmers, ranchers, foresters, and agronomists can use the surveys to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the surveys to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the surveys to help them understand, protect, and enhance the environment.

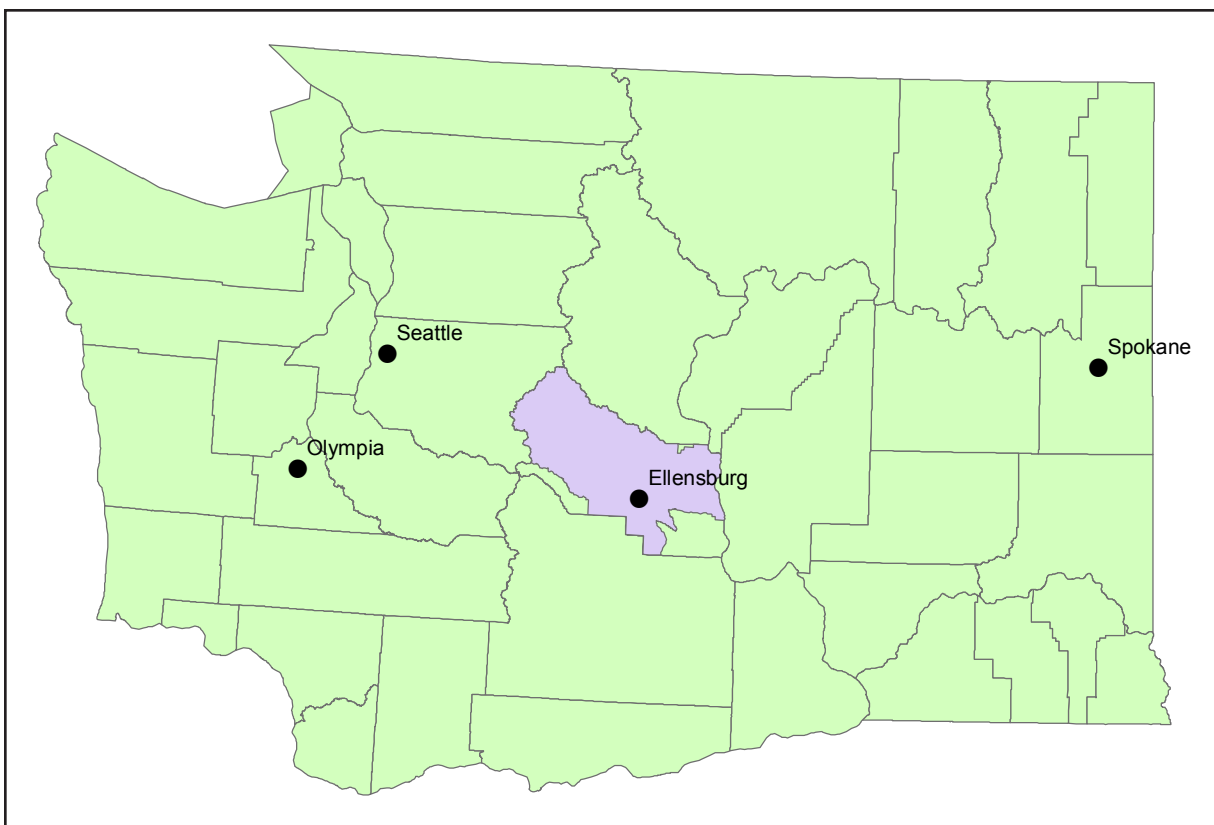
Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each map unit is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Roylene Rides at the Door
State Conservationist
Natural Resources Conservation Service



Location of Kittitas County Area in Washington.

Soil Survey of Kittitas County Area, Washington

By Herman R. Gentry

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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
United States Department of Agriculture, Forest Service; Washington State Department of Natural Resources; and Washington State University, Agricultural Research Center

KITTITAS COUNTY AREA is in the central part of Washington. It is bordered on the north by Chelan County, on the east by the Columbia River, on the south by Yakima County, and on the west by the crest of the Cascade Mountains, which rise to an average elevation of 6,000 feet. Mount Daniel, at 7,986 feet, is the highest point in the survey area. The survey area, which has a total area of 2,297 square miles, can be divided into four areas—the Cascades in the west and northwest, the upper and lower valleys of the Yakima River, the Wenatchee Mountains along the northern edge of the lower valley, and the Manastash and Umtanum Ridges paralleling the southern edge of the lower valley. Elevation ranges from 6,000 feet or more in the northwestern part to 1,900 feet through Cle Elum, 1,600 feet in Ellensburg, and 475 feet along the Columbia River in the southeastern part. The Wenatchee Mountains, along the Chelan-Kittitas County line, rise to more than 5,000 feet. The Manastash and Umtanum Ridges average 2,500 to 2,800 feet in elevation.

The major water sources include the Columbia, Yakima, and Cle Elum Rivers, Lake Kachess, Lake Keechelus, and Lake Cle Elum.

About 183 different kinds of soils are in the survey area. A majority of the soils formed in residuum and colluvium derived from basalt with loess in the upper part. Other soils formed in alluvium, glacial till, glacial outwash, lacustrine deposits, volcanic ash, and residuum and colluvium derived from sedimentary, metamorphic, and igneous rock.

Climate

Prepared by the Natural Resources Conservation Service, National Water and Climate Center, Portland, Oregon.

Climate data are provided in tables 1 through 3. [Table 1](#) gives data on temperature and precipitation, [table 2](#) shows probable dates of the first freeze in fall and the last freeze in spring, and [table 3](#) provides data on the length of the growing season. The data were recorded at Ellensburg, Washington, in the period 1971 to 2000.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from data recorded at the First Order station at Yakima, Washington.

In winter, the average temperature is 28.9 degrees F and the average daily minimum temperature is 20.9 degrees. The lowest temperature on record, which occurred at Ellensburg on December 12, 1919, is -31 degrees. In summer, the average temperature is 65.9 degrees and the average daily maximum temperature is 80.7 degrees. The highest recorded temperature, which occurred at Ellensburg on July 26, 1928, is 110 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 9.01 inches. Of this, 2.38 inches, or 26 percent, usually falls in May through September. The growing season for most crops falls within this period. Thunderstorms occur on about 7 days each year, and most occur in June.

The average seasonal snowfall is about 26.3 inches. The greatest snow depth at any one time during the period of record was 32 inches recorded on December 28, 1996. On the average, 42 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 45 percent. Humidity is higher at night, and the average at dawn is about 78 percent. The sun shines 79 percent of the time possible in summer and 33 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 8.5 miles per hour, in April.

Additional climatic data is available online at <http://www.wcc.nrcs.usda.gov/>.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular

kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Soils on Flood Plains and Terraces

1. Kayak-Weirman

Very deep, somewhat excessively drained, moderately well drained, and somewhat poorly drained soils on level to nearly level flood plains and terraces

This map unit is in the south-central part of the survey area. The soils in this unit are on flood plains and terraces. Elevation is 700 to 1,800 feet. The mean annual precipitation is 9 to 15 inches, the mean annual air temperature is about 49 degrees F, and the frost-free period is 130 to 195 days.

This map unit makes up 0.7 percent of the survey area.

The Kayak soils are very deep. They formed in alluvium. The mean annual precipitation is about 11 inches.

The Weirman soils are very deep. They formed in alluvium. The mean annual precipitation is about 12 inches.

Of minor extent are Esquatzel, Nosal, and Zillah soils.

This map unit is used for irrigated crop production, pasture, forage crop production, and wildlife habitat.

Soils on Younger Alluvial Fans and Terraces

2. Brickmill-Nanum-Opnish

Very deep, moderately well drained and somewhat poorly drained soils on level to nearly level alluvial fans

This map unit is in the south-central part of the survey area. Elevation is 1,400 to 2,400 feet. The mean annual precipitation is 9 to 12 inches, the mean annual air temperature is about 49 degrees F, and the frost-free period is 130 to 150 days.

This map unit makes up 4.9 percent of the survey area.

The Brickmill soils are very deep. They formed in alluvium. They are on fans. The mean annual precipitation is about 11 inches.

The Nanum soils are very deep. They formed in alluvium. They are on fans and terraces. The mean annual precipitation is about 11 inches.

The Opnish soils are very deep. They formed in alluvium. They are on fans and terraces. The mean annual precipitation is about 12 inches.

Of minor extent are Ackna, Brysill, Kayak, Mitta, Nitzel, Deedale, Nack, Woldale, Tanaha, and Weirman soils.

This map unit is used for irrigated crop production, pasture, and forage crop production.

3. Modsel-Varodale-Millhouse

Very deep, well drained and moderately well drained soils on level to gently sloping alluvial fans and terraces

This map unit is in the south-central part of the survey area. Elevation is 1,500 to 2,500 feet. The mean annual precipitation is 12 to 15 inches, the mean annual air temperature is about 48 degrees F, and the frost-free period is 110 to 150 days.

This map unit makes up 1 percent of the survey area.

The Modsel soils are very deep. They formed in alluvium with an influence of volcanic ash in the upper part. They are on alluvial fans. The mean annual precipitation is about 13 inches.

The Varodale soils are very deep. They formed in alluvium with an influence of volcanic ash in the upper part. They are on terraces and alluvial fans. The mean annual precipitation is about 13 inches.

The Millhouse soils are very deep. They formed in alluvium with an influence of loess and volcanic ash in the upper part. They are on terraces and alluvial fans. The mean annual precipitation is about 13 inches.

Of minor extent are Mendian, Metser, Meystre, and Umtanum soils.

This map unit is used for irrigated crop production, pasture, and forage crop production.

Soils on Older Alluvial Fans, Terraces, Till Plains, and Hillslopes

4. Selah-Terlan-Rollinger

Shallow and moderately deep to a duripan and very deep, well drained soils that formed in alluvium and loess on level to steep alluvial fans, terraces, and hillslopes

This map unit is in the southeastern part of the survey, in the Badger Pocket area. Elevation is 1,500 to 2,500 feet. The mean annual precipitation is 11 to 16 inches, the mean annual air temperature is about 49 degrees F, and the frost-free period is 130 to 180 days.

This map unit makes up 2.8 percent of the survey area.

The Selah soils are moderately deep to a duripan. They formed in alluvium with loess in the upper part. They are on terraces. The mean annual precipitation is about 11 inches.

The Terlan soils are shallow to a duripan. They formed in alluvium with loess in the upper part. They are on fan remnants and alluvial fans. The mean annual precipitation is about 11 inches.

The Rollinger soils are very deep. They formed in loess with an influence of volcanic ash. They are on hillslopes. The mean annual precipitation is about 13 inches.

Of minor extent are Benwy, Cleman, Durtash, and Manastash soils and Durixerolls. This map unit is used for irrigated crop production, forage crop production, and pasture.

5. Reeser-Reelow-Sketter

Shallow and moderately deep to a duripan, well drained soils that formed in glacial drift and alluvium on level to strongly sloping alluvial fans, terraces, and till plains

This map unit is in the east-central part of the survey area. Elevation is 1,600 to 3,400 feet. The mean annual precipitation is 12 to 16 inches, the mean annual air temperature is about 49 degrees F, and the frost-free period is 130 to 150 days.

This map unit makes up 4 percent of the survey area.

The Reeser soils are moderately deep to a duripan. They formed in alluvium and glacial drift with loess and volcanic ash in the upper part. They are on fan remnants, terraces, and till plains. The mean annual precipitation is about 14 inches.

The Reelow soils are shallow to a duripan. They formed in alluvium and glacial drift with loess and volcanic ash in the upper part. They are on fan remnants, terraces, and till plains. The mean annual precipitation is about 14 inches.

The Sketter soils are moderately deep to a duripan. They formed in alluvium and glacial drift with loess and volcanic ash in the upper part. They are on fan remnants, terraces, and till plains. The mean annual precipitation is about 14 inches.

Of minor extent are Kayak, Lablue, Maxhill, and Weirman soils.

This map unit is used for irrigated crop production, pasture, forage crop production, and wildlife habitat.

Soils on Columbia River Terraces

6. Malaga

Very deep soils that formed in glacial outwash

This map unit is in the eastern part of the survey area. The soils are nearly level to strongly sloping. Elevation is 500 to 1,300 feet. The mean annual precipitation is 6 to 9 inches, the mean annual air temperature is about 49 degrees F, and the frost-free period is 135 to 195 days.

This map unit makes up 0.3 percent of the survey area.

The Malaga soils are very deep. They formed in glacial outwash. They are on terraces and terrace escarpments. The mean annual precipitation is about 7 inches.

Of minor extent are Esquatzel, Nevo, and Fortyday soils.

This map unit is used for livestock grazing and wildlife habitat.

Soils on Columbia and Yakima River Canyonlands

7. Fortyday-Disage-Nevo

Extremely dry soils that formed in loess and colluvium and residuum derived from basalt

This map unit is in the eastern part of the survey area. The soils are nearly level to very steep. Elevation is 500 to 2,600 feet. The mean annual precipitation is 6 to 9 inches, the mean annual air temperature is about 49 degrees F, and the frost-free period is 135 to 195 days.

This map unit makes up 3.1 percent of the survey area.

The Fortyday soils are shallow. They formed in residuum and colluvium derived from basalt with loess in the upper part. They are on structural benches, plateaus, and hillslopes. The mean annual precipitation is about 8 inches.

The Disage soils are shallow. They formed in residuum and colluvium derived from basalt with loess in the upper part. They are on summits of hills. The mean annual precipitation is about 8 inches.

The Nevo soils are very shallow. They formed in residuum derived from basalt. They are on summits of hills. The mean annual precipitation is about 8 inches.

Of minor extent are Drino, Kiona, Levnik, Nosser, and Sohapp soils.

This map unit is used for livestock grazing and wildlife habitat.

8. Vantage-Clerf-Argabak

Very dry soils that formed in loess and colluvium and residuum derived from basalt

This map unit is in the eastern part of the survey area. The soils are nearly level to very steep. Elevation is 700 to 3,500 feet. The mean annual precipitation is 9 to 15 inches, the mean annual air temperature is about 49 degrees F, and the frost-free period is 130 to 170 days.

This map unit makes up 9.9 percent of the survey area.

The Vantage soils are shallow. They formed in residuum and colluvium derived from basalt with loess. They are on plateaus, structural benches, and hillslopes. The mean annual precipitation is about 12 inches.

The Clerf soils are moderately deep. They formed in residuum and colluvium derived from basalt. They are on summits of hillslopes. The mean annual precipitation is about 12 inches.

The Argabak soils are very shallow. They formed in loess mixed with residuum derived from basalt. They are on structural benches and hillslopes. The mean annual precipitation is about 12 inches.

Of minor extent are Benwy, Grinrod, Laric, Marlic, Mozen, Palerf, Ralock, Niben, Wipple, and Zen soils.

This map unit is used for livestock grazing and wildlife habitat.

9. Camaspatch-Laufer-Shinn

Dry soils that formed in loess and colluvium and residuum derived from basalt

This map unit is in the eastern and southern parts of the survey area. The soils are nearly level to very steep. Elevation is 1,700 to 4,400 feet. The mean annual precipitation is 12 to 18 inches, the mean annual air temperature is about 47 degrees F, and the frost-free period is 100 to 150 days.

This map unit makes up 10.2 percent of the survey area.

The Camaspatch soils are shallow. They formed in residuum and colluvium derived from basalt with loess. They are on summits of hillslopes and structural benches. The mean annual precipitation is about 13 inches.

The Laufer soils are shallow. They formed in slope alluvium and colluvium derived from basalt with loess. They are on hillslopes and canyon walls. The mean annual precipitation is about 16 inches.

The Shinn soils are very shallow. They formed in residuum and colluvium derived from basalt with loess and a small amount of volcanic ash. They are on summits of hills and dissected plateaus. The mean annual precipitation is about 16 inches.

Of minor extent are Lainand, Nint, McDaniel, Tanksel, Thiessen, Shushuskin, Pachneum, Patron, Whiskeydick, and Wockum soils.

This map unit is used for livestock grazing and wildlife habitat.

Soils on Mountain Slopes, Valleys, Glacial Outwash Plains, Terraces, Moraines, and Hills

10. Teanaway-Swauk-Qualla

Soils that support rangeland to dry forestland vegetation

This map unit is in the central part of the survey, near the Swauk Prairie area. The soils are strongly sloping to steep. Elevation is 1,600 to 3,600 feet. The mean annual precipitation is 15 to 40 inches, the mean annual air temperature is about 46 degrees F, and the frost-free period is 80 to 140 days.

This map unit makes up 3 percent of the survey area.

The Teanaway soils are very deep. They formed in loess over glacial till or outwash with an influence of volcanic ash in the upper part. They are on mountain slopes, terraces, and terrace escarpments. The mean annual precipitation is about 30 inches.

The Swauk soils are moderately deep to dense till. They formed in glacial till with loess in the upper part. They are on moraines. The mean annual precipitation is about 16 inches.

The Qualla soils are very deep. They formed in glacial till with loess in the upper part. They are on moraines. The mean annual precipitation is about 17 inches.

Of minor extent are Dystroxerepts and Elkheights, Hardmauk, Mippon, Myzel, Patnish, and Quicksell soils.

This map unit is used for timber production, livestock grazing, irrigated crop production, and wildlife habitat.

11. Roslyn-Natkim-Racker

Soils that support dry to moist forestland vegetation

This map unit is in the west-central part of the survey area. The soils are gently sloping to very steep. Elevation is 1,900 to 2,600 feet. The mean annual precipitation is 30 to 60 inches, the mean annual air temperature is about 45 degrees F, and the frost-free period is 80 to 120 days.

This map unit makes up 3.7 percent of the survey area.

The Roslyn soils are very deep. They formed in glacial drift with a mantle of loess and volcanic ash. They are on terraces, valleysides, and kame terraces. The mean annual precipitation is about 35 inches.

The Natkim soils are very deep. They formed in glacial till and colluvium derived from andesite and basalt mixed with volcanic ash. They are on mountain slopes and glacial trough valleys. The mean annual precipitation is about 50 inches.

The Racker soils are very deep. They formed in glacial outwash with a mantle of volcanic ash. They are on outwash terraces. The mean annual precipitation is about 36 inches.

Of minor extent are Kladnick soils, Dystroxerepts, and Xerofluvents.

This map unit is used for timber production, livestock grazing, recreation, wildlife habitat, and watershed.

Soils in Glaciated Valleys and on Mountains

12. Vabus-Chinkmin-Kachess

Soils that support cold, moist forestland vegetation

This map unit is in the western and northwestern parts of the survey area. The soils are nearly level to very steep. Elevation is 2,100 to 5,700 feet. The mean annual

precipitation is 50 to 120 inches, the mean annual air temperature is about 40 degrees F, and the frost-free period is 35 to 85 days.

This map unit makes up 7.8 percent of the survey area.

The Vabus soils are moderately deep to dense till. They formed in dense till with an admixture of volcanic ash. They are on mountain slopes and glacial trough valleys. The mean annual precipitation is about 75 inches.

The Chinkmin soils are moderately deep to dense till. They formed in volcanic ash, pumice, and colluvium over dense till. They are on cirques, mountain slopes, lateral moraines, and till plains. The mean annual precipitation is about 90 inches.

The Kachess soils are very deep. They formed in ablation till and glacial fluvial deposits with volcanic ash in the upper part. They are on glacial valley floors and till plains. The mean annual precipitation is about 65 inches.

Of minor extent are Andic Dystrocrypts, Cryaquepts, Cryofluvents, and Gilpar, Ronsel, Nimue, and Thetis soils.

This map unit is used for timber production, recreation, wildlife habitat, and watershed.

Soils on Mountains

13. Jumpe-Loneridge-Bocker

Soils that support cool, dry forestland vegetation and formed in basalt

This map unit is in the south-central and northeastern parts of the survey area. The soils are nearly level to very steep. Elevation is 1,700 to 5,400 feet. The mean annual precipitation is 18 to 40 inches, the mean annual air temperature is about 44 degrees F, and the frost-free period is 70 to 120 days.

This map unit makes up 16.9 percent of the survey area.

The Jumpe soils are very deep. They formed in residuum and colluvium derived from basalt with loess and volcanic ash in the upper part. They are on mountain slopes. The mean annual precipitation is about 30 inches.

The Loneridge soils are very deep. They formed in residuum and colluvium derived from basalt and andesite with loess and volcanic ash in the upper part. They are on mountain slopes. The mean annual precipitation is about 30 inches.

The Bocker soils are very shallow. They formed in residuum and colluvium derived from basalt with loess and volcanic ash in the upper part. They are on mountain slopes. The mean annual precipitation is about 28 inches.

Of minor extent are Cliffdell, Stemilt, Jumpmore, Jummer, Tekison, Anatone, Yahne, and Sapkin soils.

This unit is used for timber production and wildlife habitat.

14. Nard-Ampad-Kiper

Soils that support cool, dry forestland vegetation and formed in sandstone

This map unit is in the north-central part of the survey area. The soils are nearly level to very steep. Elevation is 1,800 to 5,500 feet. The mean annual precipitation is 20 to 40 inches, the mean annual air temperature is about 44 degrees F, and the frost-free period is 70 to 130 days.

This map unit makes up 8.8 percent of the survey area.

The Nard soils are deep and very deep. They formed in residuum and colluvium derived from sandstone with an influence of volcanic ash in the upper part. They are on mountain slopes and terraces. The mean annual precipitation is about 30 inches.

The Ampad soils are moderately deep. They formed in residuum and colluvium derived from sandstone with an influence of volcanic ash in the upper part. They are on mountain slopes and cuestas. The mean annual precipitation is about 30 inches.

The Kiper soils are very deep. They formed in residuum and colluvium derived from sandstone with an influence of volcanic ash in the upper part. They are on mountain slopes. The mean annual precipitation is about 30 inches.

Of minor extent are Scotties, Chapot, Keechelus, Kafing, and Standup soils.

This unit is used for timber production, livestock grazing, and wildlife habitat.

15. Roxer-Deroux-Andic Dystroxerepts

Soils that support cool, moist forestland vegetation and formed in basalt or sandstone

This map unit is in the west-central part of the survey area. The soils are gently sloping to very steep. Elevation is 2,200 to 6,200 feet. The mean annual precipitation is 35 to 60 inches, the mean annual air temperature is about 44 degrees F, and the frost-free period is 80 to 120 days.

This map unit makes up 3.7 percent of the survey area.

The Roxer soils are deep and very deep. They formed in colluvium derived from basalt and glacial till with a mantle of volcanic ash. They are on mountain slopes. The mean annual precipitation is about 50 inches.

The Deroux soils are moderately deep. They formed in colluvium and residuum derived from sandstone with a mantle of volcanic ash. They are on mountain slopes. The mean annual precipitation is about 50 inches.

Andic Dystroxerepts are moderately deep and deep. They formed in colluvium and residuum derived from basalt with volcanic ash in the upper part. They are on mountain slopes. The mean annual precipitation is about 50 inches.

Of minor extent are Bograp, Bertolotti, and Osborn soils.

This map unit is used for timber production, livestock grazing, and wildlife habitat.

16. Naxing-Saydab-Madrak

Soils that support cold, dry forestland vegetation

This map unit is in the southwestern and northeastern parts of the survey area. The soils are nearly level to very steep. Elevation is 2,200 to 6,500 feet. The mean annual precipitation is 20 to 50 inches, the mean annual air temperature is about 42 degrees F, and the frost-free period is 60 to 110 days.

This map unit makes up 5.3 percent of the survey area.

The Naxing soils are very deep. They formed in colluvium and residuum derived from basalt mixed with volcanic ash and loess. They are on mountain slopes. The mean annual precipitation is about 40 inches.

The Saydab soils are moderately deep. They formed in colluvium and residuum derived from basalt mixed with volcanic ash and loess. They are on mountain slopes. The mean annual precipitation is about 35 inches.

The Madrak soils are moderately deep. They formed in colluvium and residuum derived from sandstone mixed with volcanic ash. They are on mountain slopes. The mean annual precipitation is about 30 inches.

Of minor extent are Terence, Spexarth, Ainsley, Darland, Jimek, Ganis, and Volperie soils.

This unit is used for timber production, livestock grazing, and wildlife habitat.

17. Nimue-Domerie-Currier

Soils that support cold, moist forestland vegetation

This map unit is in the northwestern part of the survey area. The soils are gently sloping to very steep. Elevation is 3,000 to 6,000 feet. The mean annual precipitation is 50 to 80 inches, the mean annual air temperature is about 42 degrees F, and the frost-free period is 35 to 90 days.

This map unit makes up 7.7 percent of the survey area.

The Nimue soils are very deep. They formed in residuum and colluvium derived from igneous rock with a mantle of volcanic ash and pumice. They are on mountain slopes. The mean annual precipitation is about 80 inches.

The Domerie soils are deep. They formed in colluvium and residuum derived from schist and phyllite with a mantle of volcanic ash. They are on mountain slopes. The mean annual precipitation is about 65 inches.

The Currier soils are very deep. They formed in colluvium and residuum derived from gneiss and granitic rock with a mantle of volcanic ash. They are on mountain slopes. The mean annual precipitation is about 60 inches.

Of minor extent are Gilpar, Kaner, Polallie, Lemah, Stilgar, and Vanepps soils.

This map unit is used for wildlife habitat and timber production.

18. Andic Dystrocryepts, avalanche chutes-Rock outcrop-Andic Haplocryods

Soils that support cold, wet forestland and alpine shrub vegetation

This map unit is in the western and northwestern parts of the survey area. The soils are nearly level to very steep. Elevation is 4,000 to 7,000 feet. The mean annual precipitation is 65 to 120 inches, the mean annual air temperature is about 38 degrees F, and the frost-free period is 35 to 80 days.

This map unit makes up 6.4 percent of the survey area.

Andic Dystrocryepts, avalanche chutes, are moderately deep to very deep. They formed in residuum and colluvium derived from volcanic and sedimentary rock with a mantle of volcanic ash. They are on mountain slopes, cirque walls, and upper slopes of glacial trough valleys. The mean annual precipitation is about 90 inches.

Areas of Rock outcrop consist of exposures of bedrock at the surface. These areas do not support plant associations, but sparse vegetation may be in cracks or joints in the rock.

Andic Haplocryods are very deep. They formed in colluvium derived from mixed rock sources with a mantle of volcanic ash. They are on mountain slopes and glacial trough valleys. The mean annual precipitation is about 90 inches.

Of minor extent are Esmeralda, Vabus, and Nimue soils; Andic Humicryods; Rubble land; and Glaciers, icefields.

This map unit is used for recreation, wildlife habitat, and watershed.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. The soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For

example, Saydab cobbly ashy loam, 0 to 25 percent slopes, is a phase of the Saydab series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Bocker-Jumpe complex, 0 to 15 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Esmeralda-Rock outcrop association, 35 to 65 percent slopes, bouldery, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Each detailed soil map unit is assigned to a major land resource area (MLRA) (USDA Agriculture Handbook 296). The MLRA for each detailed soil map unit is given in this section. Some map units, such as Rock outcrop, Water, and other miscellaneous areas, may not be assigned to a single MLRA because the unit can occur in any MLRA.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

2—Saydab cobbly ashy loam, 0 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 4,600 to 6,800 feet

Mean annual precipitation: 20 to 50 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 45 to 90 days

Map Unit Composition

Saydab and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Saydab

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash and loess

Slope range: 0 to 25 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 10 to 17 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Subalpine fir/dwarf huckleberry (CES422)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 3 inches; cobbly ashy loam

3 to 10 inches; gravelly ashy loam

10 to 17 inches; very gravelly ashy loam

17 to 27 inches; very cobbly ashy loam

27 to 36 inches; unweathered bedrock

Dissimilar Minor Components

Ganis soils

Percentage of map unit: 10 percent

Darland soils

Percentage of map unit: 5 percent

Major Use

Timber production

3—Naxing ashy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 6,500 feet

Mean annual precipitation: 40 to 50 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 30 to 75 days

Map Unit Composition

Naxing and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Naxing

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Whitebark pine/pinegrass (CAG112)

Typical profile

0 to 2 inches; slightly decomposed plant material
2 to 6 inches; ashy loam
6 to 18 inches; gravelly ashy loam
18 to 38 inches; extremely cobbly ashy sandy loam
38 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Saydab soils

Percentage of map unit: 10 percent

Darland soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

4—Naxing gravelly ashy loam, 45 to 65 percent slopes, stony

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope
Elevation: 4,200 to 6,300 feet
Mean annual precipitation: 22 to 50 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 30 to 75 days

Map Unit Composition

Naxing and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Naxing

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash
Slope range: 45 to 65 percent
Percentage of surface area covered with stones: 0.01 to 0.1 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Forest Service plant community class: Whitebark pine/pinegrass (CAG112)

Typical profile

0 to 2 inches; slightly decomposed plant material
2 to 6 inches; gravelly ashy loam
6 to 18 inches; gravelly ashy loam
18 to 38 inches; extremely cobbly ashy sandy loam
38 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Saydab soils

Percentage of map unit: 5 percent

Major Use

Timber production

6—*Ganis ashy silt loam, 7 to 25 percent slopes*

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope
Elevation: 4,200 to 6,300 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 40 to 42 degrees F
Frost-free period: 60 to 95 days

Map Unit Composition

Ganis and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Ganis

Setting

Landform: Mountain plateaus, mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with an influence of loess and volcanic ash in the upper part
Slope range: 7 to 25 percent
Depth to restrictive feature: 16 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 10 inches; ashy silt loam

10 to 19 inches; gravelly ashy silt loam

19 to 29 inches; unweathered bedrock

Dissimilar Minor Components

Darland soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

8—Sapkin very cobbly loam, 45 to 75 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 5,200 feet

Mean annual precipitation: 18 to 35 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 130 days

Map Unit Composition

Sapkin and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Sapkin

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 45 to 75 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 16 inches; very cobbly loam

16 to 25 inches; very cobbly loam
25 to 36 inches; very cobbly loam
36 to 46 inches; unweathered bedrock

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Livestock grazing

9—Naxing ashy loam, 0 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 4,900 to 6,000 feet

Mean annual precipitation: 40 to 50 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 30 to 75 days

Map Unit Composition

Naxing and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Naxing

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash

Slope range: 0 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Subalpine fir/dwarf huckleberry (CES422)

Typical profile

0 to 2 inches; slightly decomposed plant material

2 to 6 inches; ashy loam

6 to 18 inches; gravelly ashy loam

18 to 38 inches; extremely cobbly ashy sandy loam

38 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Saydab soils

Percentage of map unit: 5 percent

Major Use

Timber production

10—Anatone very cobbly loam, 5 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 5,500 feet

Mean annual precipitation: 16 to 35 inches

Mean annual air temperature: 40 to 45 degrees F

Frost-free period: 60 to 120 days

Map Unit Composition

Anatone and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Anatone

Setting

Landform: Plateaus, mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt, andesite, or welded tuff mixed with loess and volcanic ash in the upper part

Slope range: 5 to 25 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 16-24 PZ (R006XY201WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 10 inches; very cobbly loam

10 to 14 inches; extremely gravelly loam

14 to 24 inches; unweathered bedrock

Dissimilar Minor Components

Sapkin soils

Percentage of map unit: 10 percent

Bocker soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

10Y—Bocker very cobbly silt loam, 0 to 25 percent slopes

Map Unit Setting

General landscape: Mountains, plateaus

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,500 feet

Mean annual precipitation: 17 to 40 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Bocker and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Bocker

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash in the upper part

Slope range: 0 to 25 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.9 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 3 inches; very cobbly silt loam

3 to 9 inches; very gravelly loam

9 to 19 inches; unweathered bedrock

Dissimilar Minor Components

Anatone soils

Percentage of map unit: 5 percent

Jumpe soils

Percentage of map unit: 5 percent

Loneridge soils

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

11—Sapkin-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope

Elevation: 1,900 to 5,400 feet

Mean annual precipitation: 18 to 35 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 130 days

Map Unit Composition

Sapkin and similar soils: 50 percent

Rubble land: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Sapkin

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of
loess

Slope range: 30 to 75 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 16 inches; very cobbly loam

16 to 25 inches; very cobbly loam

25 to 36 inches; very cobbly loam

36 to 46 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Jumpe soils

Percentage of map unit: 5 percent

Loneridge soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

12—Sapkin very cobbly loam, 10 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 2,200 to 5,400 feet

Mean annual precipitation: 18 to 35 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 130 days

Map Unit Composition

Sapkin and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Sapkin

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 10 to 45 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 16 inches; very cobbly loam

16 to 25 inches; very cobbly loam
25 to 36 inches; very cobbly loam
36 to 46 inches; unweathered bedrock

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 5 percent

Jumpe soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Stemilt soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

13—Jumpe stony ashy loam, 5 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,400 to 5,800 feet

Mean annual precipitation: 18 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 115 days

Map Unit Composition

Jumpe and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Jumpe

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 5 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 4 inches; stony ashy loam

4 to 12 inches; cobbly ashy loam
12 to 28 inches; very cobbly ashy loam
28 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 10 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

14—Jumpe stony ashy loam, 25 to 45 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,400 to 5,800 feet

Mean annual precipitation: 18 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 115 days

Map Unit Composition

Jumpe and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Jumpe

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 4 inches; stony ashy loam

4 to 12 inches; cobbly ashy loam

12 to 28 inches; very cobbly ashy loam

28 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

15—Stemilt ashy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope

Elevation: 2,000 to 4,900 feet

Mean annual precipitation: 16 to 22 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 75 to 100 days

Map Unit Composition

Stemilt and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Stemilt

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt and andesite with loess
and volcanic ash in the upper part

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry/bluebunch
wheatgrass (CDS637)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 5 inches; ashy loam

5 to 17 inches; ashy loam

17 to 60 inches; very cobbly clay loam

Dissimilar Minor Components

Jumpe soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

16—Stemilt-Rock outcrop complex, 25 to 75 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,700 to 4,600 feet

Mean annual precipitation: 16 to 22 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 75 to 100 days

Map Unit Composition

Stemilt and similar soils: 50 percent

Rock outcrop: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Stemilt

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt and andesite with loess and volcanic ash in the upper part

Slope range: 25 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry/bluebunch wheatgrass (CDS637)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 5 inches; ashy loam

5 to 17 inches; ashy loam

17 to 60 inches; very cobbly clay loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 25 to 75 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Junpe soils

Percentage of map unit: 5 percent

Loneridge soils

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

18—Loneridge ashy loam, 0 to 25 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,700 to 5,400 feet

Mean annual precipitation: 20 to 40 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 75 to 105 days

Map Unit Composition

Loneridge and similar soils: 95 percent

Dissimilar minor component: 5 percent

Characteristics of Loneridge

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite mixed with loess and volcanic ash in the upper part

Slope range: 0 to 25 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 10 to 20 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Douglas-fir/common snowberry/bluebunch wheatgrass (CDS637)

Typical profile

0 to 4 inches; ashy loam

4 to 19 inches; very cobbly ashy loam

19 to 46 inches; very cobbly clay

46 to 60 inches; extremely gravelly clay

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

19—Darland very gravelly ashy loam, 30 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 4,100 to 6,600 feet

Mean annual precipitation: 25 to 45 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 30 to 90 days

Map Unit Composition

Darland and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Darland

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt mixed with loess and volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: HIGH MOUNTAIN PARK (R006XY703WA)

Typical profile

0 to 7 inches; very gravelly ashy loam
7 to 15 inches; very gravelly ashy loam
15 to 21 inches; very cobbly loam
21 to 32 inches; extremely cobbly loam
32 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Naxing soils

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Stilgar soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

20—Darland very gravelly ashy loam, moist, 30 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 4,500 to 6,200 feet

Mean annual precipitation: 65 to 75 inches

Mean annual air temperature: 39 degrees F

Frost-free period: 30 to 90 days

Map Unit Composition

Darland, moist, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Darland, Moist

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt mixed with loess and volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: SUBALPINE PARK (R006XY704WA)

Typical profile

0 to 7 inches; very gravelly ashy loam
7 to 15 inches; very gravelly ashy loam
15 to 21 inches; very cobbly loam
21 to 32 inches; extremely cobbly loam
32 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Currier soils

Percentage of map unit: 5 percent

Kaner soils

Percentage of map unit: 5 percent

Stilgar soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

**24—Loneridge ashy loam, 25 to 45 percent north slopes,
stony**

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 5,400 feet

Mean annual precipitation: 20 to 40 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 75 to 105 days

Map Unit Composition

Loneridge, north slopes, and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Loneridge, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite mixed with loess and volcanic ash in the upper part

Slope range: 25 to 45 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 10 to 20 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 4 inches; ashy loam

4 to 19 inches; very cobbly ashy loam

19 to 46 inches; very cobbly clay

46 to 60 inches; extremely gravelly clay

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

27—Tekison stony loam, 0 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 4,600 feet

Mean annual precipitation: 16 to 25 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 150 days

Map Unit Composition

Tekison and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Tekison

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess and volcanic ash in the upper part

Slope range: 0 to 25 percent

Depth to restrictive feature: 4 to 16 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Ponderosa pine/pinegrass-bluebunch wheatgrass (CPG231)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 8 inches; stony loam
8 to 15 inches; extremely cobbly clay loam
15 to 60 inches; extremely cobbly clay

Dissimilar Minor Components

Rock Creek soils

Percentage of map unit: 10 percent

Meystre soils

Percentage of map unit: 5 percent

Major Use

Timber production

28—Odo loam, 10 to 40 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope

Elevation: 2,000 to 3,600 feet

Mean annual precipitation: 15 to 19 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 145 to 180 days

Map Unit Composition

Odo and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Odo

Setting

Landform: Canyons, hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with an influence of
loess and volcanic ash in the upper part

Slope range: 10 to 40 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Ponderosa pine/pinegrass-bluebunch
wheatgrass (CPG231)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 11 inches; loam

11 to 19 inches; loam
19 to 60 inches; gravelly loam

Dissimilar Minor Components

Clint soils

Percentage of map unit: 5 percent

Rock Creek soils

Percentage of map unit: 5 percent

Stemilt soils

Percentage of map unit: 5 percent

Major Use

Timber production

29—Stemilt very gravelly ashy loam, warm, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 4,400 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Stemilt, warm, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Stemilt, Warm

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt and andesite with loess and volcanic ash in the upper part

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Ponderosa pine/pinegrass-bluebunch wheatgrass (CPG231)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 5 inches; very gravelly ashy loam

5 to 17 inches; very cobbly ashy loam

17 to 60 inches; very cobbly clay loam

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Tekison soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 3 percent

Rubble land

Percentage of map unit: 2 percent

Major Use

Timber production

30—Stemilt ashy loam, 5 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope

Elevation: 2,000 to 6,200 feet

Mean annual precipitation: 16 to 22 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 75 to 100 days

Map Unit Composition

Stemilt and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Stemilt

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt and andesite with loess
and volcanic ash in the upper part

Slope range: 5 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Douglas-fir/common snowberry/bluebunch
wheatgrass (CDS637)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 5 inches; ashy loam
5 to 17 inches; ashy loam
17 to 60 inches; very cobbly clay loam

Dissimilar Minor Components

Jump soils

Percentage of map unit: 5 percent

Loneridge soils

Percentage of map unit: 5 percent

Meystre soils

Percentage of map unit: 5 percent

Major Use

Timber production

32—Stemilt ashy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope

Elevation: 1,800 to 6,000 feet

Mean annual precipitation: 16 to 22 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 75 to 100 days

Map Unit Composition

Stemilt and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Stemilt

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt and andesite with loess
and volcanic ash in the upper part

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry/bluebunch
wheatgrass (CDS637)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 5 inches; ashy loam
5 to 17 inches; ashy loam
17 to 60 inches; very cobbly clay loam

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 5 percent

Jumpe soils

Percentage of map unit: 5 percent

Loneridge soils

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

33—Bocker-Jumpe complex, 0 to 15 percent slopes

Map Unit Setting

General landscape: Mountains, plateaus

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,800 to 5,500 feet

Mean annual precipitation: 18 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Bocker and similar soils: 50 percent

Jumpe and similar soils: 40 percent

Dissimilar minor component: 10 percent

Characteristics of Bocker

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash in the upper part

Slope range: 0 to 15 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.9 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 3 inches; very cobbly silt loam
3 to 9 inches; very gravelly loam
9 to 19 inches; unweathered bedrock

Characteristics of Jumpe

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 2 inches; moderately decomposed plant material
2 to 4 inches; stony ashy loam
4 to 12 inches; cobbly ashy loam
12 to 28 inches; very cobbly ashy loam
28 to 60 inches; extremely cobbly loam

Dissimilar Minor Component

Sapkin soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, timber production

34—Bocker-Sapkin complex, 0 to 25 percent slopes

Map Unit Setting

General landscape: Mountains, plateaus

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,400 to 5,000 feet

Mean annual precipitation: 18 to 35 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Bocker and similar soils: 45 percent

Sapkin and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Bocker

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash in the upper part

Slope range: 0 to 25 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.9 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 3 inches; very cobbly silt loam

3 to 9 inches; very gravelly loam

9 to 19 inches; unweathered bedrock

Characteristics of Sapkin

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 0 to 25 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 16 inches; very cobbly loam

16 to 25 inches; very cobbly loam

25 to 36 inches; very cobbly loam

36 to 46 inches; unweathered bedrock

Dissimilar Minor Components

Stemilt soils

Percentage of map unit: 10 percent

Jumpe soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

35—Bocker-Stemilt complex, 0 to 25 percent slopes

Map Unit Setting

General landscape: Mountains, plateaus

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

8—Columbia Plateau

Elevation: 3,100 to 4,900 feet

Mean annual precipitation: 17 to 22 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Bocker and similar soils: 45 percent

Stemilt and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Bocker

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash in the upper part

Slope range: 0 to 25 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.9 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 3 inches; very cobbly silt loam

3 to 9 inches; very gravelly loam

9 to 19 inches; unweathered bedrock

Characteristics of Stemilt

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt and andesite with loess and volcanic ash in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 5 to 25 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Forest Service plant community class: Douglas-fir/common snowberry/bluebunch wheatgrass (CDS637)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 5 inches; ashy loam
5 to 17 inches; ashy loam
17 to 60 inches; very cobbly clay loam

Dissimilar Minor Components

Loneridge soils

Percentage of map unit: 10 percent

Sapkin soils

Percentage of map unit: 10 percent

Major Uses

Timber production, livestock grazing

40—Rubble land-Rock outcrop complex, 10 to 90 percent slopes

Map Unit Setting

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains
Elevation: 600 to 7,400 feet

Map Unit Composition

Rubble land: 60 percent
Rock outcrop: 40 percent

Characteristics of Rubble Land

Properties and qualities

Slope range: 10 to 90 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 10 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Major Uses

Recreation, wildlife habitat

41—Cliffdell gravelly ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 4,000 to 5,400 feet

Mean annual precipitation: 25 to 55 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Cliffdell and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Cliffdell

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite with a mantle of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Grand fir/Cascade Oregongrape/pinegrass (CWS226)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; gravelly ashy sandy loam

9 to 26 inches; very cobbly loam
26 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Osborn soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Yahne soils

Percentage of map unit: 5 percent

Major Use

Timber production

42—Cliffdell gravelly ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 3,000 to 5,400 feet

Mean annual precipitation: 25 to 55 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Cliffdell and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Cliffdell

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/Cascade Oregongrape/pinegrass (CWS226)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; gravelly ashy sandy loam

9 to 26 inches; very cobbly loam
26 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Osborn soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Yahne soils

Percentage of map unit: 5 percent

Major Use

Timber production

48—Jumpe stony ashy loam, 45 to 65 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,400 to 5,800 feet

Mean annual precipitation: 18 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 115 days

Map Unit Composition

Jumpe, north slopes, and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Jumpe, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 4 inches; stony ashy loam

4 to 12 inches; cobbly ashy loam

12 to 28 inches; very cobbly ashy loam

28 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

49—Jumpe stony ashy loam, 25 to 45 percent south slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 5,800 feet

Mean annual precipitation: 18 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 115 days

Map Unit Composition

Jumpe, south slopes, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Jumpe, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 4 inches; stony ashy loam

4 to 12 inches; cobbly ashy loam

12 to 28 inches; very cobbly ashy loam

28 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

50—Jumpe stony ashy loam, 45 to 65 percent south slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,800 to 5,800 feet

Mean annual precipitation: 18 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 115 days

Map Unit Composition

Jumpe, south slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Jumpe, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 4 inches; stony ashy loam

4 to 12 inches; cobbly ashy loam

12 to 28 inches; very cobbly ashy loam

28 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

51—Jumpe-Rock outcrop complex, 30 to 70 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 5,000 feet

Mean annual precipitation: 18 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 115 days

Map Unit Composition

Jumpe and similar soils: 65 percent

Rock outcrop: 20 percent

Dissimilar minor components: 15 percent

Characteristics of Jumpe

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 4 inches; stony ashy loam

4 to 12 inches; cobbly ashy loam
12 to 28 inches; very cobbly ashy loam
28 to 60 inches; extremely cobbly loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Loneridge soils

Percentage of map unit: 10 percent

Cliffdell soils

Percentage of map unit: 5 percent

Major Use

Timber production

52—Loneridge ashy loam, 45 to 65 percent north slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 2,800 to 5,400 feet

Mean annual precipitation: 20 to 40 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 75 to 105 days

Map Unit Composition

Loneridge, north slopes, and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Loneridge, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite mixed with loess and volcanic ash in the upper part

Slope range: 45 to 65 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 10 to 20 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Douglas-fir/common snowberry/pinegrass
(CDS638)

Typical profile

0 to 4 inches; ashy loam
4 to 19 inches; very cobbly ashy loam
19 to 46 inches; very cobbly clay
46 to 60 inches; extremely gravelly clay

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

53—Loneridge ashy loam, 25 to 45 percent slopes, stony

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau
Elevation: 1,800 to 5,400 feet
Mean annual precipitation: 20 to 40 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 75 to 105 days

Map Unit Composition

Loneridge, south slopes, and similar soils: 80 percent
Dissimilar minor components: 20 percent

Characteristics of Loneridge, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite mixed with loess and volcanic ash in the upper part
Slope range: 25 to 45 percent
Percentage of surface area covered with stones: 0.01 to 0.1 percent
Depth to restrictive feature: 10 to 20 inches to abrupt textural change
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

*Forest Service plant community class: Douglas-fir/common snowberry/bluebunch
wheatgrass (CDS637)*

Typical profile

0 to 4 inches; ashy loam

4 to 19 inches; very cobbly ashy loam

19 to 46 inches; very cobbly clay

46 to 60 inches; extremely gravelly clay

Dissimilar Minor Components

Bocker soils

Percentage of map unit: 5 percent

Clint soils

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Rock Creek soils

Percentage of map unit: 3 percent

Rock outcrop

Percentage of map unit: 2 percent

Major Use

Timber production

53M—Tekison stony loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

*Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope*

Elevation: 1,800 to 4,600 feet

Mean annual precipitation: 16 to 25 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 150 days

Map Unit Composition

Tekison and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Tekison

Setting

Landform: Mountain slopes

Properties and qualities

*Parent material: Residuum and colluvium derived from basalt with a minor amount of
loess and volcanic ash in the upper part*

Slope range: 25 to 45 percent

Depth to restrictive feature: 4 to 16 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Ponderosa pine/pinegrass-bluebunch
wheatgrass (CPG231)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; stony loam

8 to 15 inches; extremely cobbly clay loam

15 to 60 inches; extremely cobbly clay

Dissimilar Minor Components

Stemilt soils

Percentage of map unit: 10 percent

Loneridge soils

Percentage of map unit: 5 percent

Major Use

Timber production

***54—Loneridge ashy loam, 45 to 65 percent slopes,
stony***

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope

Elevation: 2,000 to 5,000 feet

Mean annual precipitation: 20 to 40 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 75 to 105 days

Map Unit Composition

Loneridge, south slopes, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Loneridge, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite mixed with
loess and volcanic ash in the upper part

Slope range: 45 to 65 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 10 to 20 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Ponderosa pine/pinegrass-bluebunch
wheatgrass (CPG231)

Typical profile

0 to 4 inches; ashy loam
4 to 19 inches; very cobbly ashy loam
19 to 46 inches; very cobbly clay
46 to 60 inches; extremely gravelly clay

Dissimilar Minor Components

Clint soils

Percentage of map unit: 5 percent

Rock Creek soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

54M—Tekison stony loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 2,200 to 3,700 feet
Mean annual precipitation: 16 to 25 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 120 to 150 days

Map Unit Composition

Tekison and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Tekison

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of
loess and volcanic ash in the upper part
Slope range: 45 to 65 percent
Depth to restrictive feature: 4 to 16 inches to abrupt textural change
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Douglas-fir/common snowberry/bluebunch
wheatgrass (CDS637)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 8 inches; stony loam
8 to 15 inches; extremely cobbly clay loam
15 to 60 inches; extremely cobbly clay

Dissimilar Minor Components

Stemilt soils

Percentage of map unit: 10 percent

Loneridge soils

Percentage of map unit: 5 percent

Major Use

Timber production

55—Shinn very cobbly ashy loam, 0 to 30 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills
Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope
Elevation: 2,200 to 5,000 feet
Mean annual precipitation: 15 to 18 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 135 days

Map Unit Composition

Shinn and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Shinn

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess and a small
amount of volcanic ash in the upper part
Slope range: 0 to 30 percent
Depth to restrictive feature: 4 to 10 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 6 inches; extremely cobbly clay loam

6 to 9 inches; extremely cobbly clay loam

9 to 18 inches; unweathered bedrock

Dissimilar Minor Components

Pachneum soils

Percentage of map unit: 10 percent

Shushuskin soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

56—Shinn-Nint-Shushuskin complex, 0 to 25 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,000 to 4,200 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Shinn and similar soils: 35 percent

Nint and similar soils: 30 percent

Shushuskin and similar soils: 30 percent

Dissimilar minor component: 5 percent

Characteristics of Shinn

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess and a small amount of volcanic ash in the upper part

Slope range: 2 to 25 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 2 inches; very cobbly ashy loam
2 to 6 inches; extremely cobbly clay loam
6 to 9 inches; extremely cobbly clay loam
9 to 18 inches; unweathered bedrock

Characteristics of Nint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and some residuum derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 0 to 25 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 9 inches; gravelly ashy loam
9 to 13 inches; very gravelly clay loam
13 to 19 inches; very gravelly clay loam
19 to 38 inches; very gravelly clay loam
38 to 48 inches; unweathered bedrock

Characteristics of Shushuskin

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and some residuum derived from basalt with loess and an influence of volcanic ash in the upper part

Slope range: 3 to 25 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 4 inches; ashy loam
4 to 8 inches; ashy loam
8 to 13 inches; ashy loam

13 to 19 inches; loam
19 to 23 inches; clay loam
23 to 32 inches; very gravelly clay loam
32 to 42 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

57—Nard stony ashy loam, sandstone substratum, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 4,100 feet

Mean annual precipitation: 20 to 30 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Nard, sandstone substratum, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nard, Sandstone Substratum

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium with an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 40 to 60 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 36 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 7.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/pinegrass-lupine (CWG125)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; stony ashy loam

4 to 12 inches; ashy loam

12 to 24 inches; loam

24 to 34 inches; clay loam

34 to 43 inches; clay loam
43 to 47 inches; weathered bedrock

Dissimilar Minor Components

Loneridge soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Stemilt soils

Percentage of map unit: 5 percent

Major Use

Timber production

62—*Pachneum ashy loam, 30 to 60 percent slopes*

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 8—Columbia Plateau

Elevation: 2,300 to 4,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Pachneum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Pachneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 26 inches; clay loam

26 to 33 inches; clay loam

33 to 47 inches; clay loam

47 to 60 inches; clay loam

Dissimilar Minor Components

Nint soils

Percentage of map unit: 10 percent

Shinn soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

64—Meystre loam, 0 to 15 percent slopes

Map Unit Setting

General landscape: Foothills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,000 to 4,500 feet

Mean annual precipitation: 15 to 22 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 130 days

Map Unit Composition

Meystre and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Meystre

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and residuum derived from sandstone

Slope range: 0 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Forest Service plant community class: Ponderosa pine/pinegrass-bluebunch
wheatgrass (CPG231)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; loam

4 to 12 inches; loam

12 to 42 inches; clay loam

42 to 60 inches; fine sandy loam

Dissimilar Minor Components

Taneum soils

Percentage of map unit: 10 percent

Tekison soils

Percentage of map unit: 5 percent

Major Use

Timber production

65—Meystre stony loam, 15 to 45 percent slopes

Map Unit Setting

General landscape: Foothills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 2,600 to 4,500 feet

Mean annual precipitation: 15 to 22 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 130 days

Map Unit Composition

Meystre and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Meystre

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and residuum derived from sandstone

Slope range: 15 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Ponderosa pine/pinegrass-bluebunch
wheatgrass (CPG231)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; stony loam

4 to 12 inches; loam

12 to 42 inches; clay loam

42 to 60 inches; fine sandy loam

Dissimilar Minor Components

Taneum soils

Percentage of map unit: 10 percent

Tekison soils

Percentage of map unit: 5 percent

Major Use

Timber production

***66—Jumpmore gravelly ashy loam, 30 to 60 percent
south slopes, stony***

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,400 to 4,900 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 65 to 100 days

Map Unit Composition

Jumpmore, south slopes, stony surface, and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Jumpmore, South Slopes, Stony Surface

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 30 to 60 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple/prince's pine
(CWS552)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 5 inches; gravelly ashy loam

5 to 14 inches; cobbly ashy loam

14 to 30 inches; very cobbly loam

30 to 60 inches; very cobbly loam

Dissimilar Minor Components

Keechelus soils

Percentage of map unit: 5 percent

Kiper soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

67—Jumpmore gravelly ashy loam, 30 to 60 percent north slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,400 to 5,200 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 65 to 100 days

Map Unit Composition

Jumpmore, north slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Jumpmore, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 30 to 60 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 5 inches; gravelly ashy loam
5 to 14 inches; cobbly ashy loam
14 to 30 inches; very cobbly loam
30 to 60 inches; very cobbly loam

Dissimilar Minor Components

Kiper soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

**69—Stirrup ashy sandy loam, sandstone substratum,
30 to 60 percent slopes**

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,000 to 5,000 feet

Mean annual precipitation: 65 to 75 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Stirrup and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Stirrup

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash mixed with colluvium derived from andesite

Slope range: 30 to 60 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia
(CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 4 inches; ashy sandy loam
4 to 8 inches; gravelly medial sandy loam
8 to 24 inches; very gravelly medial loam
24 to 36 inches; extremely gravelly medial sandy loam
36 to 43 inches; extremely gravelly sandy loam
43 to 53 inches; unweathered bedrock

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

70—McDaniel very stony ashy loam, 30 to 65 percent slopes

Map Unit Setting

General landscape: Foothills

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 3,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 100 to 135 days

Map Unit Composition

McDaniel and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of McDaniel

Setting

Landform: Canyons

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 30 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 11 inches; very stony ashy loam
11 to 19 inches; gravelly ashy loam
19 to 24 inches; very cobbly clay loam
24 to 32 inches; very cobbly clay loam
32 to 60 inches; extremely cobbly clay loam

Dissimilar Minor Components

Clint soils

Percentage of map unit: 5 percent

Rock Creek soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Taneum soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

71—Kiper stony ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,600 to 6,200 feet

Mean annual precipitation: 24 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 145 days

Map Unit Composition

Kiper and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Kiper

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone with a minor amount of volcanic ash in the upper part

Slope range: 5 to 30 percent

Depth to restrictive feature: 25 to 41 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 4 inches; stony ashy sandy loam
4 to 8 inches; ashy gravelly sandy loam
8 to 35 inches; gravelly sandy loam
35 to 60 inches; gravelly loamy sand

Dissimilar Minor Components

Jumpe soils

Percentage of map unit: 10 percent

Loneridge soils

Percentage of map unit: 5 percent

Major Use

Timber production

75—Yahne cobbly ashy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 3,100 to 5,100 feet

Mean annual precipitation: 40 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 95 to 130 days

Map Unit Composition

Yahne and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Yahne

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt, andesite, and pyroclastic rock with a mantle of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: 15 to 25 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 9 inches; cobbly ashy loam

9 to 17 inches; very cobbly loam
17 to 60 inches; very cobbly clay

Dissimilar Minor Components

Ainsley soils

Percentage of map unit: 10 percent

Osborn soils

Percentage of map unit: 5 percent

Major Use

Timber production

76—Yahne cobbly ashy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,400 to 5,200 feet

Mean annual precipitation: 40 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 95 to 130 days

Map Unit Composition

Yahne and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Yahne

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt, andesite, and pyroclastic rock with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: 15 to 25 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; cobbly ashy loam

9 to 17 inches; very cobbly loam

17 to 60 inches; very cobbly clay

Dissimilar Minor Components

Ainsley soils

Percentage of map unit: 10 percent

Osborn soils

Percentage of map unit: 5 percent

Major Use

Timber production

77—Ainsley stony ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 4,000 to 5,100 feet

Mean annual precipitation: 50 to 70 inches

Mean annual air temperature: 42 to 44 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Ainsley and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ainsley

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt, andesite, or pyroclastic rock with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Subalpine fir/dwarf huckleberry (CES422)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 2 inches; stony ashy sandy loam

2 to 7 inches; gravelly ashy sandy loam

7 to 22 inches; very cobbly ashy loam

22 to 34 inches; extremely cobbly clay loam

34 to 60 inches; extremely cobbly clay loam

Dissimilar Minor Components

Yahne soils

Percentage of map unit: 10 percent

Terence soils

Percentage of map unit: 5 percent

Major Use

Timber production

78—Ainsley stony ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 3,800 to 5,000 feet

Mean annual precipitation: 50 to 70 inches

Mean annual air temperature: 42 to 44 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Ainsley and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ainsley

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt, andesite, or pyroclastic rock with a mantle of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Subalpine fir/dwarf huckleberry (CES422)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 2 inches; stony ashy sandy loam

2 to 7 inches; gravelly ashy sandy loam

7 to 22 inches; very cobbly ashy loam

22 to 34 inches; extremely cobbly clay loam

34 to 60 inches; extremely cobbly clay loam

Dissimilar Minor Components

Yahne soils

Percentage of map unit: 10 percent

Terence soils

Percentage of map unit: 5 percent

Major Use

Timber production

80—Cliffdell-Rock outcrop complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 25 to 55 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Cliffdell and similar soils: 60 percent

Rock outcrop: 35 percent

Dissimilar minor component: 5 percent

Characteristics of Cliffdell

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and andesite with a mantle of volcanic ash

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; gravelly ashy sandy loam

9 to 26 inches; very cobbly loam

26 to 60 inches; extremely cobbly loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 75 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Jumpe soils

Percentage of map unit: 5 percent

Major Use

Timber production

81—Terence gravelly ashy sandy loam, 0 to 30 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,400 to 5,700 feet

Mean annual precipitation: 45 to 65 inches

Mean annual air temperature: 38 to 42 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Terence and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Terence

Setting

Landform: Valleysides, mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from andesite, basalt, and pyroclastic rock mixed with volcanic ash

Slope range: 0 to 30 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 6 inches; gravelly ashy sandy loam

6 to 14 inches; very cobbly ashy loam

14 to 29 inches; extremely cobbly ashy loam

29 to 60 inches; extremely cobbly ashy loam

Dissimilar Minor Components

Yahne soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

83—Terence gravelly ashy sandy loam, 30 to 60 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,700 feet

Mean annual precipitation: 45 to 65 inches

Mean annual air temperature: 38 to 42 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Terence and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Terence

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from andesite, basalt, and pyroclastic rock mixed with volcanic ash

Slope range: 30 to 60 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 6 inches; gravelly ashy sandy loam

6 to 14 inches; very cobbly ashy loam

14 to 29 inches; extremely cobbly ashy loam

29 to 60 inches; extremely cobbly ashy loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Spexarth soils

Percentage of map unit: 5 percent

Yahne soils

Percentage of map unit: 5 percent

Major Use

Timber production

85—Spexarth ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 45 to 60 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 40 to 80 days

Map Unit Composition

Spexarth and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Spexarth

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash mixed with colluvium and residuum derived from sandstone

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; ashy sandy loam

5 to 19 inches; paragravelly ashy sandy loam

19 to 28 inches; very paragravelly sandy loam

28 to 38 inches; weathered bedrock

Dissimilar Minor Components

Currier soils

Percentage of map unit: 10 percent

Yahne soils

Percentage of map unit: 5 percent

Major Use

Timber production

86—Osborn ashy sandy loam, 30 to 60 percent south slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,900 to 5,400 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Osborn, south slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Osborn, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; ashy sandy loam

9 to 16 inches; sandy loam

16 to 33 inches; paragravelly sandy loam

33 to 42 inches; weathered bedrock

Dissimilar Minor Components

Cliffdell soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

87—Osborn ashy sandy loam, 30 to 60 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 3,200 to 5,600 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Osborn, north slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Osborn, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; ashy sandy loam

9 to 16 inches; sandy loam

16 to 33 inches; paragravelly sandy loam

33 to 42 inches; weathered bedrock

Dissimilar Minor Components

Volperie soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

89—Cryaquepts, 0 to 3 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains

Elevation: 2,700 to 5,900 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 60 to 90 days

Map Unit Composition

Cryaquepts and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Cryaquepts

Setting

Landform: Floors of glacial troughs, depressions

Properties and qualities

Parent material: Alluvium and volcanic ash

Slope range: 0 to 3 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): At the soil surface to a depth of 2 inches
(see Water Features table)

Available water capacity (entire profile): High (about 10.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6w

Forest Service plant community class: Sitka alder/alluvial bar (SWGR12)

Typical profile

0 to 7 inches; ashy silt loam

7 to 27 inches; ashy silt loam

27 to 60 inches; clay loam

Dissimilar Minor Components

Ainsley soils

Percentage of map unit: 10 percent

Haplosaprists

Percentage of map unit: 5 percent

Major Use

Wildlife habitat

90—Bertolotti ashy sandy loam, 30 to 60 percent south slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,300 to 5,400 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Bertolotti, south slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Bertolotti, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from gneiss and granite with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple/prince's pine (CWS552)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; ashy sandy loam

3 to 11 inches; ashy sandy loam

11 to 17 inches; gravelly loam

17 to 27 inches; very gravelly loam

27 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Currier soils

Percentage of map unit: 10 percent

Spexarth soils

Percentage of map unit: 5 percent

Major Use

Timber production

91—Bertolotti ashy sandy loam, 30 to 60 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,100 to 5,000 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Bertolotti, north slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Bertolotti, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from gneiss and granite with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vanillaleaf (CWS524)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; ashy sandy loam

3 to 11 inches; ashy sandy loam

11 to 17 inches; gravelly loam

17 to 27 inches; very gravelly loam

27 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Currier soils

Percentage of map unit: 10 percent

Volperie soils

Percentage of map unit: 5 percent

Major Use

Timber production

92—Rock outcrop-Bertolotti complex, 60 to 90 percent slopes

Map Unit Setting

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,300 to 5,000 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Rock outcrop: 60 percent

Bertolotti and similar soils: 30 percent

Dissimilar minor component: 10 percent

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 60 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Characteristics of Bertolotti

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from gneiss and granite with a mantle of volcanic ash

Slope range: 60 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/pinegrass (CDG131)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; ashy sandy loam

3 to 11 inches; ashy sandy loam

11 to 17 inches; gravelly loam

17 to 27 inches; very gravelly loam

27 to 60 inches; extremely cobbly loam

Dissimilar Minor Component

Currier soils

Percentage of map unit: 10 percent

Major Use

Timber production

93—Bertolotti ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,300 to 3,700 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Bertolotti and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Bertolotti

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from gneiss and granite with a mantle of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Grand fir/vanillaleaf (CWS524)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; ashy sandy loam

3 to 11 inches; ashy sandy loam

11 to 17 inches; gravelly loam

17 to 27 inches; very gravelly loam

27 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Roslyn soils

Percentage of map unit: 10 percent

Volperie soils

Percentage of map unit: 5 percent

Major Use

Timber production

96—Terence gravelly ashy loam, cool, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 4,400 to 5,400 feet

Mean annual precipitation: 45 to 65 inches

Mean annual air temperature: 38 to 42 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Terence and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Terence

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from andesite, basalt, and pyroclastic rock mixed with volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 6 inches; gravelly ashy sandy loam

6 to 14 inches; very cobbly ashy loam

14 to 29 inches; extremely cobbly ashy loam

29 to 60 inches; extremely cobbly ashy loam

Dissimilar Minor Components

Jimek soils

Percentage of map unit: 5 percent

Kaner soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

97—*Stilgar gravelly ashy sandy loam, 30 to 60 percent slopes*

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 4,000 to 5,600 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 75 days

Map Unit Composition

Stilgar and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Stilgar

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash mixed with colluvium derived from andesite, basalt, tuff, and breccia

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; gravelly ashy sandy loam

9 to 18 inches; very gravelly ashy sandy loam

18 to 38 inches; very gravelly ashy loam

38 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Currier soils

Percentage of map unit: 5 percent

Jimek soils

Percentage of map unit: 5 percent

Kaner soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

101—Standup very gravelly ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,000 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 95 to 130 days

Map Unit Composition

Standup and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Standup

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from rhyolite with an influence of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; very gravelly ashy sandy loam

5 to 26 inches; extremely cobbly sandy loam

26 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Domerie soils

Percentage of map unit: 10 percent

Cliffdell soils

Percentage of map unit: 5 percent

Jumpe soils

Percentage of map unit: 5 percent

Major Use

Timber production

102—Standup very gravelly ashy sandy loam, 30 to 60 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,300 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 95 to 130 days

Map Unit Composition

Standup, north slopes, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Standup, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from rhyolite with an influence of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; very gravelly ashy sandy loam

5 to 26 inches; extremely cobbly sandy loam

26 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Domerie soils

Percentage of map unit: 10 percent

Cliffdell soils

Percentage of map unit: 5 percent

Jumpe soils

Percentage of map unit: 5 percent

Major Use

Timber production

104—Currier cobbly ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,400 to 5,200 feet

Mean annual precipitation: 45 to 70 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Currier and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Currier

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from granitic and gneiss with a mantle of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 3 inches; cobbly ashy sandy loam

3 to 9 inches; very gravelly ashy sandy loam

9 to 36 inches; very gravelly ashy sandy loam

36 to 60 inches; extremely gravelly sandy loam

Dissimilar Minor Component

Bertolotti soils

Percentage of map unit: 10 percent

Major Use

Timber production

105—Currier cobbly ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,000 to 6,000 feet

Mean annual precipitation: 45 to 70 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Currier and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Currier

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from granitic and gneiss with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 3 inches; cobbly ashy sandy loam

3 to 9 inches; very gravelly ashy sandy loam

9 to 36 inches; very gravelly ashy sandy loam

36 to 60 inches; extremely gravelly sandy loam

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 10 percent

Kaner soils

Percentage of map unit: 5 percent

Major Use

Timber production

106—Currier cobbly ashy sandy loam, 60 to 90 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,000 to 5,400 feet

Mean annual precipitation: 45 to 70 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Currier and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Currier

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from granitic and gneiss with a mantle of volcanic ash

Slope range: 60 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 3 inches; cobbly ashy sandy loam

3 to 9 inches; very gravelly ashy sandy loam

9 to 36 inches; very gravelly ashy sandy loam

36 to 60 inches; extremely gravelly sandy loam

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

108—Jimek gravelly ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 4,400 to 6,300 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 38 to 41 degrees F

Frost-free period: 40 to 75 days

Map Unit Composition

Jimek and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Jimek

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from rhyolite, tuft, and volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Whitebark pine/common juniper (CAS421)

Typical profile

0 to 6 inches; gravelly ashy sandy loam

6 to 10 inches; very cobbly ashy loam

10 to 25 inches; extremely cobbly ashy loam

25 to 38 inches; extremely cobbly ashy sandy loam

38 to 48 inches; unweathered bedrock

Dissimilar Minor Components

Currier soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

112—Natkim-Rock outcrop complex, 35 to 75 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 5,000 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Natkim and similar soils: 55 percent

Rock outcrop: 30 percent

Dissimilar minor components: 15 percent

Characteristics of Natkim

Setting

Landform: Mountain slopes, glacial troughs

Properties and qualities

Parent material: Glacial till and colluvium derived from andesite and basalt mixed with volcanic ash

Slope range: 35 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple/prince's pine (CWS552)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 8 inches; gravelly ashy sandy loam

8 to 40 inches; very cobbly ashy sandy loam

40 to 60 inches; extremely cobbly sandy loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 35 to 75 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Deroux soils

Percentage of map unit: 10 percent

Roxer soils

Percentage of map unit: 5 percent

Major Use

Timber production

115—Jimek gravelly ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,300 to 6,300 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 38 to 41 degrees F

Frost-free period: 40 to 75 days

Map Unit Composition

Jimek and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Jimek

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from rhyolite, tuff, and volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Whitebark pine/common juniper (CAS421)

Typical profile

0 to 6 inches; gravelly ashy sandy loam

6 to 10 inches; very cobbly ashy loam

10 to 25 inches; extremely cobbly ashy loam

25 to 38 inches; extremely cobbly ashy sandy loam

38 to 48 inches; unweathered bedrock

Dissimilar Minor Components

Stilgar soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

123—Kaner very gravelly ashy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,600 to 6,200 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 75 days

Map Unit Composition

Kaner and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Kaner

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from gneiss, phyllite, and diorite with a mixture of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; very gravelly ashy loam

4 to 12 inches; very gravelly ashy loam

12 to 23 inches; very gravelly ashy loam

23 to 36 inches; extremely gravelly ashy loam

36 to 60 inches; extremely gravelly loam

Dissimilar Minor Components

Currier soils

Percentage of map unit: 10 percent

Jimek soils

Percentage of map unit: 5 percent

Stilgar soils

Percentage of map unit: 5 percent

Major Use

Timber production

125—Bearrun ashy loam, 10 to 40 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 3,200 to 5,600 feet

Mean annual precipitation: 30 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Bearrun and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Bearrun

Setting

Landform: Landslides on mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt and bentonite with an influence of volcanic ash in the upper part

Slope range: 10 to 40 percent

Depth to restrictive feature: 10 to 27 inches to abrupt textural change

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Grand fir/Cascade Oregongrape/pinegrass (CWS226)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 7 inches; ashy sandy loam

7 to 23 inches; ashy loam

23 to 45 inches; clay

45 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Keechelus soils

Percentage of map unit: 10 percent

Nard soils

Percentage of map unit: 5 percent

Major Use

Timber production

128—Kafing ashy sandy loam, 30 to 60 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 3,200 to 4,900 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Kafing, north slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Kafing, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and siltstone with an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/low huckleberry/pinegrass (CDS833)

Typical profile

0 to 2 inches; slightly decomposed plant material

2 to 6 inches; ashy sandy loam

6 to 13 inches; paragravelly ashy loam

13 to 24 inches; paragravelly clay loam

24 to 60 inches; very paragravelly clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 10 percent

Scotties soils

Percentage of map unit: 5 percent

Major Use

Timber production

129—Kafing ashy sandy loam, 30 to 60 percent south slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,400 to 4,900 feet

Mean annual precipitation: 35 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Kafing, south slopes, and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Kafing, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and siltstone with an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/low huckleberry (CDS832)

Typical profile

0 to 2 inches; slightly decomposed plant material

2 to 6 inches; ashy sandy loam

6 to 13 inches; paragravelly ashy loam

13 to 24 inches; paragravelly clay loam

24 to 60 inches; very paragravelly clay loam

Dissimilar Minor Component

Spexarth soils

Percentage of map unit: 10 percent

Major Use

Timber production

130—Brisky very cobbly loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,800 to 4,600 feet

Mean annual precipitation: 21 to 24 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 110 to 130 days

Map Unit Composition

Brisky and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Brisky

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from sandstone mixed with volcanic ash and loess

Slope range: 30 to 60 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Ponderosa pine/bitterbrush/ bluebunch
wheatgrass (CPS241)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very cobbly loam

9 to 18 inches; extremely cobbly loam

18 to 22 inches; unweathered bedrock

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 10 percent

Kafing soils

Percentage of map unit: 5 percent

Kiper soils

Percentage of map unit: 5 percent

Major Use

Timber production

131—Kladnick very stony ashy sandy loam, warm, 5 to 15 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 3,000 feet

Mean annual precipitation: 25 to 30 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Kladnick, warm, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Kladnick, Warm

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash with a mantle of volcanic ash

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 4 inches; very stony ashy sandy loam

4 to 15 inches; gravelly ashy sandy loam

15 to 24 inches; very gravelly sandy loam

24 to 60 inches; extremely gravelly sand

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 10 percent

Quicksell soils

Percentage of map unit: 5 percent

Major Use

Timber production

137—Dumps, mine

Map Unit Setting

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope
Elevation: 2,000 to 3,600 feet

Map Unit Composition

Dumps, mine: 100 percent

Characteristics of Dumps, Mine

Properties and qualities

Slope range: 15 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

138—Pits, mine

Map Unit Setting

Major land resource area (MLRA): 3—Olympic and Cascade Mountains;
8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope
Elevation: 1,500 to 5,700 feet

Map Unit Composition

Pits, mine: 100 percent

Characteristics of Pits, Mine

Properties and qualities

Slope range: 15 to 45 percent

Depth to restrictive feature: Lithic bedrock at the surface

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

139—Nard ashy loam, 0 to 3 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope
Elevation: 2,000 to 3,000 feet

Mean annual precipitation: 30 to 40 inches

Soil Survey of Kittitas County Area, Washington

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Nard and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nard

Setting

Landform: Terraces

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 3 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 36 inches (see Water Features table)

Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; ashy loam

4 to 12 inches; ashy loam

12 to 24 inches; loam

24 to 34 inches; clay loam

34 to 60 inches; clay loam

Dissimilar Minor Components

Mippon soils

Percentage of map unit: 10 percent

Cumulic Haploxerolls

Percentage of map unit: 5 percent

Major Use

Timber production

141—Nard ashy loam, 25 to 45 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 4,200 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Nard and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Nard

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium with an influence of volcanic ash in the upper part

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 36 inches (see Water Features table)

Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/common snowberry/pinegrass (CWS336)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; ashy loam

4 to 12 inches; ashy loam

12 to 24 inches; loam

24 to 34 inches; clay loam

34 to 60 inches; clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 10 percent

Kiper soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

142—Scotties gravelly ashy sandy loam, sandy substratum, 45 to 75 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Soil Survey of Kittitas County Area, Washington

Elevation: 2,400 to 4,800 feet

Mean annual precipitation: 35 to 40 inches

Mean annual air temperature: 41 to 44 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Scotties and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Scotties

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with a thin mantle of volcanic ash and loess

Slope range: 45 to 75 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 11 inches; gravelly ashy loam

11 to 19 inches; gravelly loam

19 to 31 inches; very gravelly loam

31 to 45 inches; extremely cobbly sandy loam

45 to 49 inches; bedrock

Dissimilar Minor Components

Keechelus soils

Percentage of map unit: 5 percent

Nard soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

144—Nard ashy loam, 5 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 4,500 feet
Mean annual precipitation: 30 to 40 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 120 days

Map Unit Composition

Nard and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Nard

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium with an influence of volcanic ash in the upper part
Slope range: 5 to 25 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 20 to 36 inches (see Water Features table)
Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 4 inches; ashy loam
4 to 12 inches; ashy loam
12 to 24 inches; loam
24 to 34 inches; clay loam
34 to 60 inches; clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 10 percent

Kiper soils

Percentage of map unit: 5 percent

Major Use

Timber production

146—Nard ashy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Soil Survey of Kittitas County Area, Washington

Elevation: 2,000 to 4,000 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Nard and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Nard

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium with an influence of volcanic ash in the upper part

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 36 inches (see Water Features table)

Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; ashy loam

4 to 12 inches; ashy loam

12 to 24 inches; loam

24 to 34 inches; clay loam

34 to 60 inches; clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 5 percent

Kiper soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Major Use

Timber production

158—Kiper stony ashy sandy loam, 30 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 6,000 feet

Mean annual precipitation: 24 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 145 days

Map Unit Composition

Kiper and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Kiper

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone with a minor amount of volcanic ash in the upper part

Slope range: 30 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 4 inches; stony ashy sandy loam

4 to 8 inches; ashy gravelly sandy loam

8 to 35 inches; gravelly sandy loam

35 to 60 inches; gravelly loamy sand

Dissimilar Minor Components

Jumpe soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

159—Ampad ashy sandy loam, 30 to 60 percent south slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 4,900 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Ampad, south slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ampad, South Slopes

Setting

Landform: Cuestas, mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with an influence of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; ashy sandy loam

5 to 10 inches; ashy sandy loam

10 to 29 inches; sandy loam

29 to 33 inches; sandy loam

33 to 43 inches; weathered bedrock

Dissimilar Minor Components

Nard soils

Percentage of map unit: 10 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

160—Cumulic Haploxerolls, 0 to 3 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 4,900 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Cumulic Haploxerolls and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Cumulic Haploxerolls

Setting

Landform: Basin floors, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 3 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 46 to 53 inches (see Water Features table)

Available water capacity (entire profile): High (about 11.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4c

Land capability subclass (irrigated): 4c

Forest Service plant community class: Black cottonwood/devilsclub (HCS441)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 8 inches; silt loam

8 to 53 inches; silty clay loam

53 to 60 inches; silty clay loam

Dissimilar Minor Components

Aquolls

Percentage of map unit: 10 percent

Nard soils

Percentage of map unit: 5 percent

Major Use

Cropland

161—Rock outcrop

Map Unit Setting

Major land resource area (MLRA): 8—Columbia Plateau; 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 570 to 7,600 feet

Map Unit Composition

Rock outcrop: 100 percent

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 10 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Major Uses

Wildlife habitat, recreation

162—Hakker clay loam, 0 to 15 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 5,800 feet

Mean annual precipitation: 20 to 35 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 90 to 130 days

Map Unit Composition

Hakker and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Hakker

Setting

Landform: Swales, bottoms of drainageways

Properties and qualities

Parent material: Colluvium derived from basalt

Slope range: 0 to 15 percent

Depth to restrictive features: 19 to 33 inches to strongly contrasting textural stratification; 40 to 60 inches to lithic bedrock

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 30 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Ecological site: SEMIWET MEADOW 16-24 PZ (R006XY602WA)

Typical profile

0 to 25 inches; clay loam

25 to 44 inches; very cobbly clay

44 to 54 inches; unweathered bedrock

Dissimilar Minor Components

Jumpe soils

Percentage of map unit: 10 percent

Loneridge soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

163—Nard ashy loam, 45 to 65 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 4,000 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Nard, north slopes, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Nard, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium
with an influence of volcanic ash in the upper part

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 36 inches (see Water
Features table)

Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/common snowberry/pinegrass
(CWS336)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 4 inches; ashy loam
4 to 12 inches; ashy loam
12 to 24 inches; loam
24 to 34 inches; clay loam
34 to 60 inches; clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 5 percent

Kiper soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Major Use

Timber production

164—Nard ashy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 4,800 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Nard and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Nard

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium
with an influence of volcanic ash in the upper part

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 36 inches (see Water
Features table)

Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; ashy loam

4 to 12 inches; ashy loam

12 to 24 inches; loam

24 to 34 inches; clay loam

34 to 60 inches; clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 5 percent

Kiper soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Major Use

Timber production

166—Ampad ashy sandy loam, warm, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 3,600 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Ampad, warm, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ampad, Warm

Setting

Landform: Cuestas, mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with an influence of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Douglas-fir/pinegrass (CDG131)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; ashy sandy loam

5 to 10 inches; ashy sandy loam

10 to 29 inches; sandy loam

29 to 33 inches; sandy loam

33 to 43 inches; weathered bedrock

Dissimilar Minor Components

Nard soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

167—Keechelus-Nard-Kafing complex, 30 to 60 percent south slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 35 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Keechelus, south slopes, and similar soils: 35 percent

Nard and similar soils: 30 percent

Kafing, south slopes, and similar soils: 15 percent

Dissimilar minor components: 20 percent

Characteristics of Keechelus, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt, breccia, and pyroclastic rock with a minor amount of volcanic ash in the upper part

Slope range: 30 to 60 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Soil Survey of Kittitas County Area, Washington

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/common snowberry/pinegrass
(CWS336)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 9 inches; gravelly ashy loam

9 to 22 inches; gravelly clay loam

22 to 35 inches; very cobbly clay loam

35 to 60 inches; very gravelly clay loam

Characteristics of Nard

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium
with an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 20 to 36 inches (see Water
Features table)

Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/common snowberry/pinegrass
(CWS336)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; ashy loam

4 to 12 inches; ashy loam

12 to 24 inches; loam

24 to 34 inches; clay loam

34 to 60 inches; clay loam

Characteristics of Kafing, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and siltstone with
an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Douglas-fir/low huckleberry (CDS832)

Typical profile

0 to 2 inches; slightly decomposed plant material
2 to 6 inches; ashy sandy loam
6 to 13 inches; paragravelly ashy loam
13 to 24 inches; paragravelly clay loam
24 to 60 inches; very paragravelly clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 10 percent

Bograp soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

***168—Keechelus-Nard-Kafing complex, 30 to 60 percent
north slopes***

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope
Elevation: 2,500 to 4,900 feet
Mean annual precipitation: 35 to 40 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 120 days

Map Unit Composition

Keechelus, north slopes, and similar soils: 35 percent
Nard and similar soils: 30 percent
Kafing, north slopes, and similar soils: 20 percent
Dissimilar minor components: 15 percent

Characteristics of Keechelus, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt, breccia, and pyroclastic rock with a minor amount of volcanic ash in the upper part
Slope range: 30 to 60 percent
Percentage of surface area covered with stones: 0.01 to 0.1 percent
Depth to restrictive feature: None within a depth of 60 inches

Soil Survey of Kittitas County Area, Washington

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 3 inches; moderately decomposed plant material
3 to 9 inches; gravelly ashy loam
9 to 22 inches; gravelly clay loam
22 to 35 inches; very cobbly clay loam
35 to 60 inches; very gravelly clay loam

Characteristics of Nard

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and old alluvium with an influence of volcanic ash in the upper part
Slope range: 30 to 60 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 20 to 36 inches (see Water Features table)
Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 4 inches; ashy loam
4 to 12 inches; ashy loam
12 to 24 inches; loam
24 to 34 inches; clay loam
34 to 60 inches; clay loam

Characteristics of Kafing, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone and siltstone with an influence of volcanic ash in the upper part
Slope range: 30 to 60 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/pinegrass (CDG131)

Typical profile

0 to 2 inches; slightly decomposed plant material

2 to 6 inches; ashy sandy loam

6 to 13 inches; paragravelly ashy loam

13 to 24 inches; paragravelly clay loam

24 to 60 inches; very paragravelly clay loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 10 percent

Bograp soils

Percentage of map unit: 5 percent

Major Use

Timber production

170—Ampad ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 4,600 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Ampad and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ampad

Setting

Landform: Cuestas, mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with an influence of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass
(CDS638)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; ashy sandy loam

5 to 10 inches; ashy sandy loam

10 to 29 inches; sandy loam

29 to 33 inches; sandy loam

33 to 43 inches; weathered bedrock

Dissimilar Minor Components

Nard soils

Percentage of map unit: 10 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

***175—Keechelus gravelly ashy loam, 5 to 30 percent
slopes, stony***

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Keechelus and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Keechelus

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt, breccia, and pyroclastic rock with a minor amount of volcanic ash in the upper part

Slope range: 5 to 30 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Grand fir/common snowberry/pinegrass
(CWS336)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 9 inches; gravelly ashy loam

9 to 22 inches; gravelly clay loam

22 to 35 inches; very cobbly clay loam

35 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Cliffdell soils

Percentage of map unit: 5 percent

Nard soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

***176—Keechelus gravelly ashy loam, 30 to 60 percent
south slopes, stony***

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Keechelus, south slopes, and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Keechelus, South Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt, breccia, and pyroclastic rock with a minor amount of volcanic ash in the upper part

Slope range: 30 to 60 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/common snowberry/pinegrass
(CWS336)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 9 inches; gravelly ashy loam

9 to 22 inches; gravelly clay loam

22 to 35 inches; very cobbly clay loam

35 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Cliffdell soils

Percentage of map unit: 5 percent

Nard soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

***177—Keechelus gravelly ashy loam, 30 to 60 percent
north slopes, stony***

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 4,900 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Keechelus, north slopes, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Keechelus, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt, breccia, and pyroclastic rock with a minor amount of volcanic ash in the upper part

Slope range: 30 to 60 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 9 inches; gravelly ashy loam

9 to 22 inches; gravelly clay loam

22 to 35 inches; very cobbly clay loam

35 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Ainsley soils

Percentage of map unit: 5 percent

Cliffdell soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

180—Nimue ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,100 to 5,500 feet

Mean annual precipitation: 70 to 120 inches

Mean annual air temperature: 38 to 41 degrees F

Frost-free period: 65 to 90 days

Map Unit Composition

Nimue and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nimue

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from igneous rock with a mantle of volcanic ash and pumice

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Mountain hemlock/rusty menziesia-Alaska huckleberry (CMS256)

Typical profile

0 to 2 inches; highly decomposed plant material

2 to 4 inches; ashy sandy loam

4 to 7 inches; ashy sandy loam

7 to 12 inches; ashy sandy loam

12 to 26 inches; very gravelly loam

26 to 60 inches; extremely gravelly silt loam

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 10 percent

Haywire soils

Percentage of map unit: 5 percent

Major Use

Timber production

181—Nimue ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,700 to 5,500 feet

Mean annual precipitation: 70 to 120 inches

Mean annual air temperature: 38 to 41 degrees F

Frost-free period: 65 to 90 days

Map Unit Composition

Nimue and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Nimue

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from igneous rock with a mantle of volcanic ash and pumice

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/beargrass-low huckleberry (CMF131)

Typical profile

0 to 2 inches; highly decomposed plant material

2 to 4 inches; ashy sandy loam

4 to 7 inches; ashy sandy loam

7 to 12 inches; ashy sandy loam

12 to 26 inches; very gravelly loam

26 to 60 inches; extremely gravelly silt loam

Dissimilar Minor Components

Chinkmin soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Haywire soils

Percentage of map unit: 5 percent

Stirrup soils

Percentage of map unit: 5 percent

Major Use

Timber production

182—Haywire ashy sandy loam, 0 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 4,100 to 5,200 feet

Mean annual precipitation: 80 to 120 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 40 to 80 days

Map Unit Composition

Haywire and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Haywire

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash and pumice over colluvium and residuum derived from igneous rock

Slope range: 0 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Mountain hemlock/beargrass-low huckleberry (CMF131)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 3 inches; ashy sandy loam

3 to 10 inches; medial loam

10 to 18 inches; gravelly medial loam

18 to 26 inches; very cobbly medial loam

26 to 38 inches; extremely cobbly loam

38 to 48 inches; unweathered bedrock

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 10 percent

Nimue soils

Percentage of map unit: 5 percent

Major Use

Timber production

183—Haywire ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,400 to 5,500 feet

Mean annual precipitation: 80 to 120 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 40 to 80 days

Map Unit Composition

Haywire and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Haywire

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash and pumice over colluvium and residuum derived from igneous rock

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/beargrass-low huckleberry (CMF131)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 3 inches; ashy sandy loam

3 to 10 inches; medial loam

10 to 18 inches; gravelly medial loam

18 to 26 inches; very cobbly medial loam

26 to 38 inches; extremely cobbly loam

38 to 48 inches; unweathered bedrock

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 10 percent

Nimue soils

Percentage of map unit: 5 percent

Major Use

Timber production

185—Andic Dystrocryepts, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,000 to 6,500 feet

Mean annual precipitation: 50 to 100 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Andic Dystrocryepts and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Andic Dystrocrypts

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt, andesite, phyllite, and sandstone with volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Mountain hemlock/pink mountainheath-Cascade huckleberry (CMS354)

Typical profile

0 to 5 inches; stony ashy sandy loam

5 to 11 inches; very gravelly ashy sandy loam

11 to 26 inches; extremely cobbly sandy loam

26 to 36 inches; unweathered bedrock

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 10 percent

Vabus soils

Percentage of map unit: 5 percent

Major Use

Timber production

186—Stirrup-Rock outcrop complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,700 to 4,700 feet

Mean annual precipitation: 65 to 75 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Stirrup and similar soils: 60 percent

Rock outcrop: 35 percent

Dissimilar minor component: 5 percent

Characteristics of Stirrup

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash mixed with colluvium derived from andesite

Slope range: 30 to 70 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 4 inches; ashy sandy loam

4 to 8 inches; gravelly medial sandy loam

8 to 24 inches; very gravelly medial loam

24 to 36 inches; extremely gravelly medial sandy loam

36 to 43 inches; extremely gravelly sandy loam

43 to 53 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Gilpar soils

Percentage of map unit: 5 percent

Major Use

Timber production

187—Chinkmin ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,500 to 4,800 feet

Mean annual precipitation: 80 to 120 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 50 to 70 days

Map Unit Composition

Chinkmin and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Chinkmin

Setting

Landform: Lateral moraines, valleysides

Properties and qualities

Parent material: Volcanic ash and pumice over dense basal till

Slope range: 5 to 30 percent

Depth to restrictive feature: 20 to 40 inches to the cemented horizon

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 36 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 2 inches; highly decomposed plant material

2 to 5 inches; ashy sandy loam

5 to 11 inches; cobbly medial loam

11 to 16 inches; cobbly medial loam

16 to 23 inches; very cobbly medial sandy loam

23 to 33 inches; very gravelly medial sandy loam

33 to 41 inches; cemented material

Dissimilar Minor Components

Nimue soils

Percentage of map unit: 7 percent

Thetis soils

Percentage of map unit: 5 percent

Vabus soils

Percentage of map unit: 5 percent

Cryaquepts

Percentage of map unit: 3 percent

Major Use

Timber production

188—Chinkmin ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Soil Survey of Kittitas County Area, Washington

Elevation: 2,500 to 5,200 feet
Mean annual precipitation: 80 to 120 inches
Mean annual air temperature: 39 to 41 degrees F
Frost-free period: 50 to 70 days

Map Unit Composition

Chinkmin and similar soils: 75 percent
Dissimilar minor components: 25 percent

Characteristics of Chinkmin

Setting

Landform: Cirques, lateral moraines, valleysides, glacial troughs

Properties and qualities

Parent material: Volcanic ash and pumice over dense basal till
Slope range: 30 to 60 percent
Depth to restrictive feature: 20 to 40 inches to cemented horizon
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 18 to 36 inches (see Water Features table)
Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Pacific silver fir/big huckleberry-sidebells shinleaf (pyrola) (CFS234)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 2 inches; highly decomposed plant material
2 to 5 inches; ashy sandy loam
5 to 11 inches; cobbly medial loam
11 to 16 inches; cobbly medial loam
16 to 23 inches; very cobbly medial sandy loam
23 to 33 inches; very gravelly medial sandy loam
33 to 41 inches; cemented material

Dissimilar Minor Components

Nimue soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Vabus soils

Percentage of map unit: 5 percent

Major Use

Timber production

190—Nimue-Rock outcrop complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,700 to 5,500 feet

Mean annual precipitation: 70 to 120 inches

Mean annual air temperature: 38 to 41 degrees F

Frost-free period: 65 to 90 days

Map Unit Composition

Nimue and similar soils: 60 percent

Rock outcrop: 25 percent

Dissimilar minor components: 15 percent

Characteristics of Nimue

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from igneous rock with a mantle of volcanic ash and pumice

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/beargrass-low huckleberry (CMF131)

Typical profile

0 to 2 inches; highly decomposed plant material

2 to 4 inches; ashy sandy loam

4 to 7 inches; ashy sandy loam

7 to 12 inches; ashy sandy loam

12 to 26 inches; very gravelly loam

26 to 60 inches; extremely gravelly silt loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 60 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Haywire soils

Percentage of map unit: 5 percent

Stirrup soils

Percentage of map unit: 5 percent

Major Use

Timber production

191—Sutkin stony loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,600 to 3,700 feet

Mean annual precipitation: 18 to 22 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 130 days

Map Unit Composition

Sutkin and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Sutkin

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with an influence of loess in the upper part

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 11 inches; stony loam

11 to 39 inches; extremely cobbly loam

39 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Jumpe soils

Percentage of map unit: 5 percent

Loneridge soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

194—Osborn-Scotties-Chapot complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,900 to 5,300 feet

Mean annual precipitation: 35 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Osborn and similar soils: 45 percent

Scotties and similar soils: 25 percent

Chapot and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Osborn

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; ashy sandy loam

9 to 16 inches; sandy loam
16 to 33 inches; paragravelly sandy loam
33 to 42 inches; weathered bedrock

Characteristics of Scotties

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with a thin mantle of volcanic ash and loess

Slope range: 30 to 70 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 11 inches; gravelly ashy loam
11 to 19 inches; gravelly loam
19 to 31 inches; very gravelly loam
31 to 45 inches; extremely cobbly sandy loam
45 to 49 inches; bedrock

Characteristics of Chapot

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from porphyritic basalt, scoria, and pyroclastic rock with a minor amount of volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/Cascade Oregongrape/pinegrass (CWS226)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 7 inches; very gravelly ashy sandy loam
7 to 15 inches; gravelly loam

15 to 25 inches; extremely gravelly loam
25 to 60 inches; extremely gravelly clay loam

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

195—Scotties-Chapot-Rock outcrop complex, 45 to 75 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 3,000 to 5,500 feet

Mean annual precipitation: 35 to 40 inches

Mean annual air temperature: 41 to 44 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Scotties and similar soils: 55 percent

Chapot and similar soils: 25 percent

Rock outcrop: 15 percent

Dissimilar minor component: 5 percent

Characteristics of Scotties

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with a thin mantle of volcanic ash and loess

Slope range: 45 to 75 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 11 inches; gravelly ashy loam

11 to 19 inches; gravelly loam

19 to 31 inches; very gravelly loam

31 to 45 inches; extremely cobbly sandy loam

45 to 49 inches; bedrock

Characteristics of Chapot

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from porphyritic basalt, scoria, and pyroclastic rock with a minor amount of volcanic ash in the upper part

Slope range: 45 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/Cascade Oregon grape/pinegrass (CWS226)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 7 inches; very gravelly ashy sandy loam

7 to 15 inches; gravelly loam

15 to 25 inches; extremely gravelly loam

25 to 60 inches; extremely gravelly clay loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 45 to 75 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Osborn soils

Percentage of map unit: 5 percent

Major Use

Timber production

201—Roslyn ashy sandy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,900 to 2,400 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 115 days

Map Unit Composition

Roslyn and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Roslyn

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial drift with a mantle of loess and volcanic ash

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Forest Service plant community class: Grand fir/common snowberry/pinegrass
(CWS336)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; ashy sandy loam

8 to 15 inches; ashy sandy loam

15 to 37 inches; loam

37 to 49 inches; gravelly loam

49 to 60 inches; gravelly loam

Dissimilar Minor Components

Nard soils

Percentage of map unit: 10 percent

Volperie soils

Percentage of map unit: 5 percent

Major Use

Timber production

203—Teanaway ashy loam, 3 to 10 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 2,500 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Teanaway and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Teanaway

Setting

Landform: Terraces

Properties and qualities

Parent material: Loess over glacial till or outwash with an influence of volcanic ash in the upper part

Slope range: 3 to 10 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 39 to 51 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 7 inches; ashy loam

7 to 22 inches; loam

22 to 42 inches; loam

42 to 51 inches; loam

51 to 60 inches; gravelly loam

Dissimilar Minor Components

Quicksell soils

Percentage of map unit: 5 percent

Racker soils

Percentage of map unit: 5 percent

Roslyn soils

Percentage of map unit: 5 percent

Major Uses

Cropland, timber production

204—Teanaway ashy loam, 25 to 50 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 2,700 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Teanaway and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Teanaway

Setting

Landform: Valleysides

Properties and qualities

Parent material: Loess over glacial till or outwash with an influence of volcanic ash in the upper part

Slope range: 25 to 50 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 39 to 51 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry (CDS636)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 7 inches; ashy loam

7 to 22 inches; loam

22 to 42 inches; loam

42 to 51 inches; loam

51 to 60 inches; gravelly loam

Dissimilar Minor Components

Racker soils

Percentage of map unit: 10 percent

Roslyn soils

Percentage of map unit: 5 percent

Major Use

Timber production

205—Xerofluvents, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 2,400 feet

Mean annual precipitation: 20 to 50 inches

Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 110 to 140 days

Map Unit Composition

Xerofluvents and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Xerofluvents

Setting

Landform: Flood plains, stream terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Frequent (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 36 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Forest Service plant community class: Douglas-fir/elk sedge (CDG132)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 20 inches; sandy loam

20 to 23 inches; loamy sand

23 to 60 inches; extremely cobbly sand

Dissimilar Minor Components

Racker soils

Percentage of map unit: 10 percent

Aquolls

Percentage of map unit: 5 percent

Major Use

Timber production

206—Dystroxerepts, 45 to 65 percent south slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,900 to 2,400 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Dystroxerepts, south slopes, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Dystroxerepts, South Slopes

Setting

Landform: Terrace escarpments

Properties and qualities

Parent material: Glacial outwash with an influence of volcanic ash in the upper part

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/pinegrass (CDG131)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 7 inches; ashy sandy loam

7 to 18 inches; gravelly ashy loam

18 to 60 inches; very gravelly sandy loam

Dissimilar Minor Components

Racker soils

Percentage of map unit: 10 percent

Roslyn soils

Percentage of map unit: 5 percent

Teaway soils

Percentage of map unit: 5 percent

Major Use

Timber production

207—Quicksell loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 3,100 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Quicksell and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Quicksell

Setting

Landform: Terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 20 to 40 inches to abrupt textural change

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 5 to 15 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Land capability subclass (irrigated): 4w

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 5 inches; loam

5 to 20 inches; clay loam

20 to 43 inches; clay

43 to 60 inches; clay loam

Dissimilar Minor Components

Swauk soils

Percentage of map unit: 10 percent

Roslyn soils

Percentage of map unit: 5 percent

Teanaway soils

Percentage of map unit: 5 percent

Major Use

Cropland

208—Patnish-Mippon-Myzel complex, 0 to 3 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 1,800 to 4,800 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Patnish and similar soils: 40 percent

Mippon and similar soils: 30 percent

Myzel and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Patnish

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 3 percent

Depth to restrictive feature: 25 to 35 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 35 to 60 inches (see Water Features table)

Available water capacity (entire profile): Low (about 6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Land capability subclass (irrigated): 3c

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 7 inches; ashy loam

7 to 14 inches; ashy loam

14 to 27 inches; loam

27 to 35 inches; very gravelly sandy loam

35 to 60 inches; extremely cobbly loamy sand

Characteristics of Mippon

Setting

Landform: Stream terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 3 percent

Depth to restrictive feature: 10 to 27 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 35 to 60 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 12 inches; very cobbly loam

12 to 18 inches; very gravelly sandy loam

18 to 60 inches; extremely cobbly loamy sand

Characteristics of Myzel

Setting

Landform: Alluvial fans, flood plains

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 3 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 35 to 57 inches (see Water Features table)

Available water capacity (entire profile): High (about 11.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 6 inches; ashy sandy clay loam

6 to 22 inches; ashy sandy clay loam

22 to 38 inches; ashy sandy clay loam

38 to 57 inches; sandy clay loam

57 to 60 inches; sandy clay loam

Dissimilar Minor Component

Xerofluvents

Percentage of map unit: 5 percent

Major Uses

Cropland, timber production

210—Dystroxerepts, 50 to 70 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,900 to 2,700 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Dystroxerepts and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Dystroxerepts

Setting

Landform: Terrace escarpments

Properties and qualities

Parent material: Glacial outwash with an influence of volcanic ash in the upper part

Slope range: 50 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 7 inches; very cobbly ashy loam

7 to 18 inches; gravelly ashy loam

18 to 60 inches; very gravelly sandy loam

Dissimilar Minor Components

Racker soils

Percentage of map unit: 10 percent

Roslyn soils

Percentage of map unit: 5 percent

Major Use

Timber production

211—*Teanaway ashy loam, 0 to 3 percent slopes*

Map Unit Setting

General landscape: Foothills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 2,500 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Teanaway and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Teanaway

Setting

Landform: Terraces

Properties and qualities

Parent material: Loess over glacial till or outwash with an influence of volcanic ash in the upper part

Slope range: 0 to 3 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 39 to 51 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Land capability subclass (irrigated): 3c

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 7 inches; ashy loam

7 to 22 inches; loam

22 to 42 inches; loam

42 to 51 inches; loam

51 to 60 inches; gravelly loam

Dissimilar Minor Components

Racker soils

Percentage of map unit: 10 percent

Quicksell soils

Percentage of map unit: 5 percent

Roslyn soils

Percentage of map unit: 5 percent

Major Uses

Timber production, cropland

213—Roslyn ashy sandy loam, moist, 3 to 25 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,900 to 2,400 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 115 days

Map Unit Composition

Roslyn, moist, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Roslyn, Moist

Setting

Landform: Kame terraces, terraces, valleysides

Properties and qualities

Parent material: Glacial drift with a mantle of loess and volcanic ash

Slope range: 3 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 8.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; ashy sandy loam

8 to 15 inches; ashy sandy loam

15 to 37 inches; loam

37 to 60 inches; gravelly loam

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 5 percent

Nard soils

Percentage of map unit: 5 percent

Quicksell soils

Percentage of map unit: 5 percent

Major Use

Timber production

214—Haplosaprists, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains

Elevation: 1,900 to 4,200 feet

Mean annual precipitation: 20 to 90 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 100 to 140 days

Map Unit Composition

Haplosaprists and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Haplosaprists

Setting

Landform: Basin floors

Properties and qualities

Parent material: Herbaceous organic material over alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Very poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): At the soil surface to a depth of 8 inches
(see Water Features table)
Available water capacity (entire profile): Very high (about 28.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 5w
Ecological site: WET MEADOW 16-24 PZ (R006XY601WA)

Typical profile

0 to 8 inches; muck
8 to 20 inches; muck
20 to 43 inches; muck
43 to 60 inches; silty clay loam

Dissimilar Minor Component

Thetis soils

Percentage of map unit: 10 percent

Major Use

Livestock grazing

216—Roxer gravelly ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains
Elevation: 2,000 to 5,400 feet
Mean annual precipitation: 40 to 65 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 85 to 145 days

Map Unit Composition

Roxer and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Roxer

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash
Slope range: 45 to 65 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; gravelly ashy sandy loam

8 to 33 inches; very gravelly loam

33 to 44 inches; very cobbly loam

44 to 60 inches; very cobbly loam

Dissimilar Minor Components

Bograp soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

217—Roxer gravelly ashy sandy loam, 5 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 3,400 feet

Mean annual precipitation: 40 to 65 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 145 days

Map Unit Composition

Roxer and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Roxer

Setting

Landform: Mountain slopes, glacial valley floors

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash

Slope range: 5 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Grand fir/vine maple/prince's pine (CWS552)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 8 inches; gravelly ashy sandy loam
8 to 33 inches; very gravelly loam
33 to 44 inches; very cobbly loam
44 to 60 inches; very cobbly loam

Dissimilar Minor Components

Bograp soils

Percentage of map unit: 5 percent

Kachess soils

Percentage of map unit: 5 percent

Kladnick soils

Percentage of map unit: 5 percent

Major Use

Timber production

218—Bograp ashy sandy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,150 to 5,300 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 145 days

Map Unit Composition

Bograp and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Bograp

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/Cascade Oregongrape/pinegrass (CWS226)

Typical profile

0 to 4 inches; moderately decomposed plant material
4 to 12 inches; ashy sandy loam
12 to 19 inches; ashy loam
19 to 28 inches; gravelly loam
28 to 64 inches; cobbly clay loam

Dissimilar Minor Components

Roslyn soils

Percentage of map unit: 10 percent

Roxer soils

Percentage of map unit: 5 percent

Major Use

Timber production

220—Roxer complex, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains

Elevation: 2,100 to 4,400 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 145 days

Map Unit Composition

Roxer, basalt substratum, and similar soils: 55 percent

Roxer and similar soils: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Roxer, Basalt Substratum

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till over bedrock with a mantle of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: 40 to 50 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/pachistima (CDS411)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 8 inches; gravelly ashy sandy loam

8 to 33 inches; very gravelly loam
33 to 44 inches; very cobbly loam
44 to 51 inches; unweathered bedrock

Characteristics of Roxer

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/pachistima (CDS411)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; gravelly ashy sandy loam

8 to 33 inches; very gravelly loam

33 to 44 inches; very cobbly loam

44 to 60 inches; very cobbly loam

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

222—Ampad ashy sandy loam, 25 to 45 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 4,400 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Ampad, north slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ampad, North Slopes

Setting

Landform: Cuestas, mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with an influence of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/Cascade Oregongrape/pinegrass (CWS226)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; ashy sandy loam

5 to 10 inches; ashy sandy loam

10 to 29 inches; sandy loam

29 to 33 inches; sandy loam

33 to 43 inches; weathered bedrock

Dissimilar Minor Components

Nard soils

Percentage of map unit: 10 percent

Standup soils

Percentage of map unit: 5 percent

Major Use

Timber production

226—Bograp ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,150 to 3,500 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 145 days

Map Unit Composition

Bograp and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Bograp

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 12 inches; ashy sandy loam

12 to 19 inches; ashy loam

19 to 28 inches; gravelly loam

28 to 64 inches; cobbly clay loam

Dissimilar Minor Components

Roxer soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

227—Jummer-Jumpmore-Rock outcrop complex, 45 to 65 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,610 to 5,100 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Jummer and similar soils: 35 percent

Jumpmore and similar soils: 35 percent

Rock outcrop: 15 percent

Dissimilar minor components: 15 percent

Characteristics of Jummer

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash in the upper part

Slope range: 45 to 65 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/common snowberry/pinegrass (CWS336)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; very gravelly ashy sandy loam

4 to 7 inches; very gravelly ashy sandy loam

7 to 21 inches; very gravelly ashy sandy loam

21 to 34 inches; extremely gravelly loam

34 to 44 inches; unweathered bedrock

Characteristics of Jumpmore

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash

Slope range: 45 to 65 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple/prince's pine (CWS552)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 5 inches; gravelly ashy loam

5 to 14 inches; cobbly ashy loam

14 to 30 inches; very cobbly loam

30 to 60 inches; very cobbly loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 45 to 65 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Natkim soils

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Sapkin soils

Percentage of map unit: 5 percent

Major Use

Timber production

228—Natkim gravelly ashy sandy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 3,600 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Natkim and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Natkim

Setting

Landform: Mountain slopes, glacial troughs

Properties and qualities

Parent material: Glacial till and colluvium derived from andesite and basalt mixed with volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple/prince's pine (CWS552)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 8 inches; gravelly ashy sandy loam
8 to 40 inches; very cobbly ashy sandy loam
40 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

229—Natkim gravelly ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 4,700 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Natkim and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Natkim

Setting

Landform: Mountain slopes, glacial troughs

Properties and qualities

Parent material: Glacial till and colluvium derived from andesite and basalt mixed with volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple/prince's pine (CWS552)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 8 inches; gravelly ashy sandy loam
8 to 40 inches; very cobbly ashy sandy loam
40 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

230—Rock outcrop-Roxer complex, 40 to 70 percent slopes

Map Unit Setting

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,300 to 5,800 feet

Mean annual precipitation: 40 to 65 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Rock outcrop: 50 percent

Roxer and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 40 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Characteristics of Roxer

Setting

Landform: Mountain slopes, glacial valley walls

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash

Slope range: 40 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 8 inches; gravelly ashy sandy loam
8 to 33 inches; very gravelly loam
33 to 44 inches; very cobbly loam
44 to 60 inches; very cobbly loam

Dissimilar Minor Components

Bograp soils

Percentage of map unit: 10 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

232—*Vabus* very stony ashy sandy loam, 5 to 25 percent slopes

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains
Elevation: 2,500 to 3,400 feet
Mean annual precipitation: 60 to 80 inches
Mean annual air temperature: 39 to 42 degrees F
Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys, valley floors

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash
Slope range: 5 to 25 percent
Depth to restrictive feature: 20 to 40 inches to dense material
Drainage class: Moderately well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/vine maple (CFS621)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; very stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

233—*Natkim gravelly ashy sandy loam, 5 to 25 percent slopes*

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 4,400 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Natkim and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Natkim

Setting

Landform: Mountain slopes, glacial troughs

Properties and qualities

Parent material: Glacial till and colluvium derived from andesite and basalt mixed with volcanic ash

Slope range: 5 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 8 inches; gravelly ashy sandy loam

8 to 40 inches; very cobbly ashy sandy loam

40 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Kladnick soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

234—Kladnick ashy sandy loam, 3 to 8 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 2,600 feet

Mean annual precipitation: 45 to 75 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Kladnick and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Kladnick

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash with a mantle of volcanic ash

Slope range: 3 to 8 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Grand fir/vanillaleaf (CWS524)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 9 inches; ashy sandy loam

9 to 15 inches; gravelly ashy sandy loam

15 to 24 inches; very gravelly sandy loam

24 to 60 inches; extremely gravelly sand

Dissimilar Minor Components

Kachess soils

Percentage of map unit: 5 percent

Natkim soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Roslyn soils

Percentage of map unit: 5 percent

Major Uses

Cropland, timber production

237—Kladnick ashy sandy loam, 0 to 3 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,000 to 3,000 feet

Mean annual precipitation: 45 to 75 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Kladnick and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Kladnick

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash with a mantle of volcanic ash

Slope range: 0 to 3 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 9 inches; ashy sandy loam

9 to 15 inches; gravelly ashy sandy loam

15 to 24 inches; very gravelly sandy loam

24 to 60 inches; extremely gravelly sand

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 5 percent

Kachess soils

Percentage of map unit: 5 percent

Roslyn soils

Percentage of map unit: 5 percent

Major Uses

Cropland, timber production

238—Racker ashy sandy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 2,500 feet

Mean annual precipitation: 30 to 45 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 85 to 120 days

Map Unit Composition

Racker and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Racker

Setting

Landform: Outwash terraces

Properties and qualities

Parent material: Glacial outwash with a mantle of volcanic ash

Slope range: 0 to 5 percent

Depth to restrictive feature: 9 to 15 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Forest Service plant community class: Douglas-fir/pinegrass (CDG131)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 5 inches; ashy sandy loam

5 to 12 inches; gravelly ashy sandy loam

12 to 31 inches; very cobbly loamy sand

31 to 60 inches; very cobbly loamy sand

Dissimilar Minor Components

Roslyn soils

Percentage of map unit: 10 percent

Natkim soils

Percentage of map unit: 5 percent

Major Use

Timber production

241—*Thetis ashy sandy loam, 25 to 45 percent slopes*

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,400 to 4,000 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Thetis and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Thetis

Setting

Landform: Mountain slopes, glacial valleysides

Properties and qualities

Parent material: Glacial till with a mantle of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 2 inches; moderately decomposed plant material
2 to 6 inches; ashy sandy loam
6 to 12 inches; gravelly ashy sandy loam
12 to 48 inches; very gravelly ashy sandy loam
48 to 60 inches; very gravelly sandy loam

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Natkim soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Vabus soils

Percentage of map unit: 5 percent

Major Use

Timber production

242—Roxer gravelly ashy sandy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains

Elevation: 2,200 to 5,000 feet

Mean annual precipitation: 40 to 65 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Roxer and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Roxer

Setting

Landform: Glacial valley walls, mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; gravelly ashy sandy loam

8 to 33 inches; very gravelly loam

33 to 44 inches; very cobbly loam

44 to 60 inches; very cobbly loam

Dissimilar Minor Components

Bograp soils

Percentage of map unit: 5 percent

Kachess soils

Percentage of map unit: 5 percent

Kladnick soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

251—Domerie-Rock outcrop complex, 40 to 70 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,000 to 5,000 feet

Mean annual precipitation: 50 to 70 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Domerie, stony surface, and similar soils: 55 percent

Rock outcrop: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Domerie, Stony Surface

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from phyllite and schist with volcanic ash in the upper part

Slope range: 40 to 70 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; gravelly ashy sandy loam

4 to 9 inches; channery ashy sandy loam

9 to 34 inches; very channery ashy sandy loam

34 to 41 inches; extremely channery ashy sandy loam

41 to 56 inches; extremely channery sandy loam

56 to 60 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 40 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

252—Domerie gravelly ashy sandy loam, 30 to 65 percent south slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,200 to 5,800 feet

Mean annual precipitation: 50 to 70 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Domerie, south slopes, stony surface, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Domerie, South Slopes, Stony Surface

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from phyllite and schist with volcanic ash in the upper part

Slope range: 30 to 65 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; gravelly ashy sandy loam

4 to 9 inches; channery ashy sandy loam

9 to 34 inches; very channery ashy sandy loam

34 to 41 inches; extremely channery ashy sandy loam

41 to 56 inches; extremely channery sandy loam

56 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Vabus soils

Percentage of map unit: 10 percent

Nimue soils

Percentage of map unit: 5 percent

Major Use

Timber production

253—Domerie gravelly ashy sandy loam, 30 to 65 percent north slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains

Elevation: 3,600 to 5,800 feet

Mean annual precipitation: 50 to 70 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Domerie, north slopes, stony surface, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Domerie, North Slopes, Stony Surface

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from phyllite and schist with volcanic ash in the upper part

Slope range: 30 to 65 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; gravelly ashy sandy loam

4 to 9 inches; channery ashy sandy loam

9 to 34 inches; very channery ashy sandy loam

34 to 41 inches; extremely channery ashy sandy loam

41 to 56 inches; extremely channery sandy loam

56 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Vabus soils

Percentage of map unit: 10 percent

Nimue soils

Percentage of map unit: 5 percent

Major Use

Timber production

254—Kachess gravelly ashy sandy loam, 5 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
3—Olympic and Cascade Mountains

Elevation: 2,100 to 3,500 feet

Mean annual precipitation: 50 to 80 inches

Mean annual air temperature: 38 to 43 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Kachess and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Kachess

Setting

Landform: Glacial valley floors, till plains

Properties and qualities

Parent material: Ablation till over glaciofluvial deposits with volcanic ash in the upper part

Slope range: 5 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/deerfoot vanillaleaf (CFF254)

Typical profile

0 to 2 inches; slightly decomposed plant material

2 to 10 inches; gravelly ashy sandy loam

10 to 30 inches; very gravelly ashy loam

30 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Kladnick soils

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

255—Thetis ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,400 to 4,900 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Thetis and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Thetis

Setting

Landform: Mountain slopes, glacial valleysides

Properties and qualities

Parent material: Glacial till with a mantle of volcanic ash
Slope range: 45 to 65 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 2 inches; moderately decomposed plant material
2 to 6 inches; ashy sandy loam
6 to 12 inches; gravelly ashy sandy loam
12 to 48 inches; very gravelly ashy sandy loam
48 to 60 inches; very gravelly sandy loam

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Natkim soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Vabus soils

Percentage of map unit: 5 percent

Major Use

Timber production

259—Fluvaquents, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 3—Olympic and Cascade Mountains
Elevation: 2,200 to 2,500 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Fluvaquents and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Fluvaquents

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium with volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification

Drainage class: Very poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 9 to 18 inches (see Water Features table)

Available water capacity (entire profile): Low (about 5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 5w

Forest Service plant community class: Grand fir/vanillaleaf (CWS524)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 9 inches; ashy silt loam

9 to 18 inches; stratified ashy sandy loam to very gravelly ashy silt loam

18 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Kladnick soils

Percentage of map unit: 10 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

262—Roslyn ashy sandy loam, clay loam subsoil, 0 to 5 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,900 to 2,400 feet

Mean annual precipitation: 30 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 115 days

Map Unit Composition

Roslyn, clay loam subsoil, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Roslyn, Clay Loam Subsoil

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial drift with a mantle of loess and volcanic ash

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 9.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; ashy sandy loam

8 to 15 inches; ashy sandy loam

15 to 31 inches; loam

31 to 60 inches; gravelly clay loam

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 10 percent

Teaway soils

Percentage of map unit: 5 percent

Major Use

Timber production

263—Volperie very paragravelly ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 2,700 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Volperie and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Volperie

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum derived from phyllite and schist with a mantle of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: 30 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 8 inches; very paragravelly ashy sandy loam
8 to 16 inches; very paragravelly loam
16 to 38 inches; extremely paragravelly loam
38 to 48 inches; weathered bedrock

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 5 percent

Kladnick soils

Percentage of map unit: 5 percent

Nard soils

Percentage of map unit: 5 percent

Roslyn soils

Percentage of map unit: 5 percent

Major Use

Timber production

264—Volperie very paragravelly ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope
Elevation: 2,200 to 4,100 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 110 days

Map Unit Composition

Volperie and similar soils: 80 percent
Dissimilar minor components: 20 percent

Characteristics of Volperie

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum derived from phyllite and schist with a mantle of volcanic ash

Soil Survey of Kittitas County Area, Washington

Slope range: 30 to 60 percent
Depth to restrictive feature: 30 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material
1 to 8 inches; very paragravelly ashy sandy loam
8 to 16 inches; very paragravelly loam
16 to 38 inches; extremely paragravelly loam
38 to 48 inches; weathered bedrock

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 5 percent

Nard soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Yahne soils

Percentage of map unit: 5 percent

Major Use

Timber production

265—Volperie very paragravelly ashy sandy loam, warm, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope
Elevation: 2,200 to 4,100 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 110 days

Map Unit Composition

Volperie, warm, and similar soils: 80 percent
Dissimilar minor components: 20 percent

Characteristics of Volperie, Warm

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum derived from phyllite and schist with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: 30 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 8 inches; very paragravelly ashy sandy loam

8 to 16 inches; very paragravelly loam

16 to 38 inches; extremely paragravelly loam

38 to 48 inches; weathered bedrock

Dissimilar Minor Components

Cliffdell soils

Percentage of map unit: 5 percent

Jumpe soils

Percentage of map unit: 5 percent

Loneridge soils

Percentage of map unit: 5 percent

Spexarth soils

Percentage of map unit: 5 percent

Major Use

Timber production

266—Volperie very paragravelly ashy sandy loam, 30 to 60 percent north slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 4,100 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Volperie, north slopes, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Volperie, North Slopes

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum derived from phyllite and schist with a mantle of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: 30 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vanillaleaf (CWS524)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 8 inches; very paragravelly ashy sandy loam

8 to 16 inches; very paragravelly loam

16 to 38 inches; extremely paragravelly loam

38 to 48 inches; weathered bedrock

Dissimilar Minor Components

Bertolotti soils

Percentage of map unit: 5 percent

Currier soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Yahne soils

Percentage of map unit: 5 percent

Major Use

Timber production

267—Esmeralda very gravelly ashy loam, 10 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,300 to 3,900 feet

Mean annual precipitation: 70 to 80 inches

Mean annual air temperature: 37 to 41 degrees F

Frost-free period: 60 to 90 days

Map Unit Composition

Esmeralda, moist, and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Esmeralda, Moist

Setting

Landform: Mountainsides

Properties and qualities

Parent material: Residuum and colluvium with an admixture of volcanic ash

Slope range: 10 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/big huckleberry/queencup
beadlily (CFS233)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; very gravelly ashy loam

3 to 10 inches; very cobbly ashy sandy loam

10 to 44 inches; very cobbly ashy sandy loam

44 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Andic Dystrocryepts

Percentage of map unit: 5 percent

Cryaquepts

Percentage of map unit: 5 percent

Major Use

Timber production

268—Vitricryands, 30 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 4,000 to 6,000 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 30 to 60 days

Map Unit Composition

Vitricryands and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Vitricryands

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt mixed with volcanic ash

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 9 inches; very gravelly ashy sandy loam

9 to 37 inches; extremely gravelly ashy loam

37 to 47 inches; unweathered bedrock

Dissimilar Minor Components

Andic Dystrocryepts

Percentage of map unit: 5 percent

Deroux soils

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Major Use

Timber production

270—Roxer-Deroux-Rock outcrop complex, 40 to 90 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,900 to 6,200 feet

Mean annual precipitation: 40 to 65 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Roxer and similar soils: 40 percent
Deroux and similar soils: 30 percent
Rock outcrop: 25 percent
Dissimilar minor component: 5 percent

Characteristics of Roxer

Setting

Landform: Mountain slopes, glacial valley walls

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash
Slope range: 40 to 90 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 8 inches; gravelly ashy sandy loam
8 to 33 inches; very gravelly loam
33 to 44 inches; very cobbly loam
44 to 60 inches; very cobbly loam

Characteristics of Deroux

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with a mantle of volcanic ash
Slope range: 40 to 90 percent
Depth to restrictive feature: 20 to 38 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 2 inches; slightly decomposed plant material
2 to 9 inches; cobbly ashy sandy loam

9 to 12 inches; very cobbly ashy sandy loam
12 to 25 inches; very stony sandy loam
25 to 35 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 40 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Andic Dystroxerepts

Percentage of map unit: 5 percent

Major Use

Timber production

271—Roxer-Deroux complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 3,000 to 5,600 feet

Mean annual precipitation: 40 to 65 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Roxer and similar soils: 55 percent

Deroux and similar soils: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Roxer

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 8 inches; gravelly ashy sandy loam
8 to 33 inches; very gravelly loam
33 to 44 inches; very cobbly loam
44 to 60 inches; very cobbly loam

Characteristics of Deroux

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with a mantle of volcanic ash

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 38 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/pinemat manzanita (CWS338)

Typical profile

0 to 2 inches; slightly decomposed plant material
2 to 9 inches; cobbly ashy sandy loam
9 to 12 inches; very cobbly ashy sandy loam
12 to 25 inches; very stony sandy loam
25 to 35 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

272—Andic Dystroxerepts-Rock outcrop complex, 40 to 70 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,000 to 6,300 feet

Mean annual precipitation: 35 to 60 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 70 to 100 days

Map Unit Composition

Andic Dystroxerepts and similar soils: 50 percent

Rock outcrop: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Andic Dystroxerepts

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with a mantle of volcanic ash

Slope range: 40 to 70 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Grand fir/vine maple (CWS551)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 14 inches; very cobbly ashy sandy loam

14 to 17 inches; extremely cobbly ashy loam

17 to 33 inches; extremely cobbly loam

33 to 43 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 40 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Deroux soils

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Major Uses

Wildlife habitat, recreation

280—Esmeralda very gravelly ashy loam, 40 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,700 to 6,300 feet

Mean annual precipitation: 60 to 70 inches

Mean annual air temperature: 37 to 41 degrees F

Frost-free period: 60 to 90 days

Map Unit Composition

Esmeralda and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Esmeralda

Setting

Landform: Mountainsides

Properties and qualities

Parent material: Residuum and colluvium with an admixture of volcanic ash

Slope range: 40 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/pink mountainheath-
Cascade huckleberry (CMS354)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; very gravelly ashy loam

3 to 10 inches; very cobbly ashy sandy loam

10 to 44 inches; very cobbly ashy sandy loam

44 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Vanepps soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

281—Vanepps-Rock outcrop complex, 25 to 50 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 4,000 to 7,200 feet

Mean annual precipitation: 65 to 85 inches

Mean annual air temperature: 38 to 40 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vanepps and similar soils: 50 percent

Rock outcrop: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Vanepps

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from serpentine with a mantle of volcanic ash

Slope range: 25 to 50 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Whitebark pine/common juniper (CAS421)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 9 inches; gravelly ashy sandy loam

9 to 29 inches; very cobbly loam

29 to 38 inches; weathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 25 to 50 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Esmeralda soils

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

284—Esmeralda very gravelly ashy sandy loam, 45 to 70 percent slopes, bouldery

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 4,000 to 6,300 feet

Mean annual precipitation: 50 to 75 inches

Mean annual air temperature: 37 to 41 degrees F

Frost-free period: 60 to 90 days

Map Unit Composition

Esmeralda, bouldery surface, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Esmeralda, Bouldery Surface

Setting

Landform: Mountainsides

Properties and qualities

Parent material: Residuum and colluvium with an admixture of volcanic ash

Slope range: 45 to 70 percent

Percentage of surface area covered with boulders: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Whitebark pine/grouse huckleberry/smooth woodrush (CAS311)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; very gravelly ashy loam

3 to 10 inches; very cobbly ashy sandy loam

10 to 44 inches; very cobbly ashy sandy loam

44 to 60 inches; extremely cobbly sandy loam

Dissimilar Minor Components

Vanepps soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

290—Andic Dystrocryepts-Rock outcrop complex, 30 to 90 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 4,200 to 7,000 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Andic Dystrocryepts and similar soils: 50 percent

Rock outcrop: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Andic Dystrocryepts

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt, andesite, phyllite, and sandstone with volcanic ash in the upper part

Slope range: 30 to 90 percent

Depth to restrictive feature: 10 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: SUBALPINE PARK (R006XY704WA)

Typical profile

0 to 5 inches; very gravelly ashy sandy loam

5 to 11 inches; very gravelly ashy sandy loam

11 to 26 inches; extremely cobbly sandy loam

26 to 36 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Deroux soils

Percentage of map unit: 5 percent

Roxer soils

Percentage of map unit: 5 percent

Major Uses

Wildlife habitat, recreation

301—*Vabus* ashy sandy loam, 0 to 25 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,500 feet

Mean annual precipitation: 60 to 90 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, valley floors, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 0 to 25 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

302—Vabus ashy sandy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,500 feet

Mean annual precipitation: 60 to 90 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 4 inches; moderately decomposed plant material
4 to 7 inches; ashy sandy loam
7 to 13 inches; ashy sandy loam
13 to 18 inches; very gravelly ashy sandy loam
18 to 35 inches; very gravelly ashy sandy loam
35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

304—Madrak gravelly ashy loam, 5 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 4,100 to 6,400 feet

Mean annual precipitation: 25 to 35 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Madrak and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Madrak

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone mixed with volcanic ash

Slope range: 5 to 45 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Subalpine fir/dwarf huckleberry (CES422)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 10 inches; gravelly ashy loam

10 to 19 inches; very cobbly ashy sandy loam

19 to 30 inches; very cobbly ashy sandy loam

30 to 39 inches; unweathered bedrock

Dissimilar Minor Components

Darland soils

Percentage of map unit: 5 percent

Naxing soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

306—*Vabus stony ashy sandy loam, 5 to 25 percent slopes*

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,000 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, valley floors, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 5 to 25 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

308—Vabus stony ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,500 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

309—Vabus ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,500 feet

Mean annual precipitation: 60 to 90 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

313—Vabus stony ashy sandy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,210 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

315—Lemah-Rock outcrop complex, 60 to 90 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Soil Survey of Kittitas County Area, Washington

Elevation: 2,700 to 5,800 feet

Mean annual precipitation: 50 to 80 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 60 to 120 days

Map Unit Composition

Lemah and similar soils: 55 percent

Rock outcrop: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Lemah

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from sandstone mixed with volcanic ash

Slope range: 60 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inches; moderately decomposed plant material

1 to 3 inches; very stony ashy sandy loam

3 to 9 inches; very cobbly ashy sandy loam

9 to 37 inches; extremely cobbly ashy sandy loam

37 to 60 inches; extremely cobbly ashy sandy loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 60 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Polallie soils

Percentage of map unit: 5 percent

Major Use

Timber production

316—Cryorthents gravelly ashy loam, 5 to 30 percent slopes, stony

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,800 to 3,510 feet

Mean annual precipitation: 70 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 50 to 80 days

Map Unit Composition

Cryorthents and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Cryorthents

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with volcanic ash in the upper part

Slope range: 5 to 30 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Pacific silver fir/Cascade azalea-big huckleberry (CFS556)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; gravelly ashy sandy loam

5 to 21 inches; very gravelly ashy sandy loam

21 to 27 inches; very cobbly sandy loam

27 to 60 inches; extremely cobbly loamy sand

Dissimilar Minor Components

Cryofluvents

Percentage of map unit: 10 percent

Vabus soils

Percentage of map unit: 5 percent

Major Use

Timber production

317—Ronsel ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,000 to 6,000 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Ronsel and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ronsel

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Glacial till with an influence of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 4 inches; ashy sandy loam

4 to 9 inches; gravelly ashy sandy loam

9 to 18 inches; very gravelly ashy sandy loam

18 to 60 inches; very gravelly sandy loam

Dissimilar Minor Components

Esmeralda soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Vanepps soils

Percentage of map unit: 5 percent

Major Use

Timber production

318—*Vabus* very stony ashy sandy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/vine maple (CFS621)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; very stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

**319—*Vabus* very stony ashy sandy loam, 45 to 65 percent
south slopes**

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,100 to 5,700 feet

Mean annual precipitation: 60 to 90 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus, south slopes, and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus, South Slopes

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Subalpine fir/pachistima (CES113)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; very stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Esmeralda soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

320—Vabus-Rock outcrop complex, 10 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 4,800 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 55 percent

Rock outcrop: 30 percent

Dissimilar minor components: 15 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 10 to 60 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/vine maple (CFS621)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; very stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam
18 to 35 inches; very gravelly ashy sandy loam
35 to 60 inches; very gravelly loamy sand

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 10 to 60 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

321—Andic Dystrocryepts-Andic Haplocryods-Rock outcrop complex, 30 to 90 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,300 to 6,400 feet

Mean annual precipitation: 80 to 120 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Andic Dystrocryepts, avalanche chute, and similar soils: 40 percent

Andic Haplocryods and similar soils: 30 percent

Rock outcrop: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Andic Dystrocryepts, Avalanche Chute

Setting

Landform: Mountain slopes, cirque walls, upper slopes of glacial troughs

Properties and qualities

Parent material: Residuum and colluvium derived from basalt, andesite, phyllite, and sandstone with volcanic ash in the upper part

Slope range: 30 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: SUBALPINE DRY SHRUB MEADOW (R006XY605WA)

Typical profile

0 to 5 inches; stony ashy sandy loam

5 to 11 inches; very gravelly ashy sandy loam

11 to 60 inches; extremely cobbly sandy loam

Characteristics of Andic Haplocryods

Setting

Landform: Side slopes of glacial troughs, mountain slopes

Properties and qualities

Parent material: Colluvium derived from various rock sources with a mantle of volcanic ash

Slope range: 30 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 4 inches; cobbly ashy sandy loam

4 to 14 inches; gravelly medial loam

14 to 24 inches; very cobbly medial loam

24 to 60 inches; very cobbly loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Rubble land

Percentage of map unit: 5 percent

Major Uses

Wildlife habitat, recreation

322—*Vabus* very stony ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,500 to 5,000 feet

Mean annual precipitation: 55 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 75 percent

Dissimilar minor components: 25 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Pacific silver fir/vine maple (CFS621)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; very stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Cryaquepts

Percentage of map unit: 5 percent

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

323—*Cryorthents cobbly ashy loam, 0 to 3 percent slopes*

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,400 to 3,700 feet

Mean annual precipitation: 90 to 100 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 40 to 80 days

Map Unit Composition

Cryorthents, cool, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Cryorthents, Cool

Setting

Landform: Stream terraces

Properties and qualities

Parent material: Alluvium with volcanic ash in the upper part

Slope range: 0 to 3 percent

Depth to restrictive feature: 8 to 17 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 17 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Pacific silver fir/vine maple (CFS621)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 8 inches; cobbly ashy loam

8 to 17 inches; extremely cobbly ashy loamy sand

17 to 60 inches; extremely cobbly sand

Dissimilar Minor Components

Chinkmin soils

Percentage of map unit: 10 percent

Cryaquepts

Percentage of map unit: 5 percent

Major Use

Timber production

324—Ronsel gravelly ashy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,000 to 5,500 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Ronsel and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ronsel

Setting

Landform: Mountain slopes, glacial valley walls, glacial valley floors

Properties and qualities

Parent material: Glacial till with an influence of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Subalpine fir/pachistima (CES113)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 4 inches; gravelly ashy sandy loam

4 to 9 inches; gravelly ashy sandy loam

9 to 18 inches; very gravelly ashy sandy loam

18 to 60 inches; very gravelly sandy loam

Dissimilar Minor Components

Esmeralda soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Vanepps soils

Percentage of map unit: 5 percent

Major Use

Timber production

328—Cryofluvents-Dystrocryepts complex, 0 to 3 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,600 to 4,600 feet

Mean annual precipitation: 60 to 100 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 50 to 80 days

Map Unit Composition

Cryofluvents and similar soils: 65 percent

Dystrocryepts and similar soils: 25 percent

Dissimilar minor component: 10 percent

Characteristics of Cryofluvents

Setting

Landform: Flood plains, stream terraces

Properties and qualities

Parent material: Volcanic ash and alluvium

Slope range: 0 to 3 percent

Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 24 to 60 inches (see Water Features table)

Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Pacific silver fir/deerfoot vanillaleaf (CFF254)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 7 inches; very cobbly ashy sandy loam

7 to 13 inches; very cobbly ashy sandy loam

13 to 60 inches; stratified extremely cobbly sand to gravelly sandy loam

Characteristics of Dystrocryepts

Setting

Landform: Stream terraces

Properties and qualities

Parent material: Cobbly alluvium

Slope range: 0 to 3 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s
Forest Service plant community class: Pacific silver fir/devilsclub (CFS351)

Typical profile

0 to 2 inches; moderately decomposed plant material
2 to 12 inches; ashy sandy loam
12 to 29 inches; very cobbly sandy loam
29 to 60 inches; extremely cobbly sand

Dissimilar Minor Component

Cryaquepts

Percentage of map unit: 10 percent

Major Use

Timber production

332—Stirrup ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

General landscape: Mountains
Major land resource area (MLRA): 3—Olympic and Cascade Mountains
Elevation: 2,700 to 4,700 feet
Mean annual precipitation: 65 to 80 inches
Mean annual air temperature: 37 to 43 degrees F
Frost-free period: 35 to 85 days

Map Unit Composition

Stirrup and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Stirrup

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash mixed with colluvium derived from andesite
Slope range: 5 to 30 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e
Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 4 inches; ashy sandy loam
4 to 8 inches; gravelly medial sandy loam
8 to 24 inches; very gravelly medial loam
24 to 36 inches; extremely gravelly medial sandy loam
36 to 43 inches; extremely gravelly sandy loam
43 to 53 inches; unweathered bedrock

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

333—Stirrup ashy sandy loam, 30 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,700 to 5,400 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Stirrup and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Stirrup

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash mixed with colluvium derived from andesite

Slope range: 30 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 4 inches; ashy sandy loam
4 to 8 inches; gravelly medial sandy loam
8 to 24 inches; very gravelly medial loam
24 to 36 inches; extremely gravelly medial sandy loam
36 to 43 inches; extremely gravelly sandy loam
43 to 53 inches; unweathered bedrock

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

334—Stirrup ashy sandy loam, 65 to 85 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,700 to 5,400 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Stirrup and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Stirrup

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Volcanic ash mixed with colluvium derived from andesite

Slope range: 65 to 85 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material
1 to 4 inches; ashy sandy loam
4 to 8 inches; gravelly medial sandy loam
8 to 24 inches; very gravelly medial loam
24 to 36 inches; extremely gravelly medial sandy loam
36 to 43 inches; extremely gravelly sandy loam
43 to 53 inches; unweathered bedrock

Dissimilar Minor Components

Gilpar soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

335—Vabus-Rock outcrop complex, 45 to 70 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,500 to 5,200 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Vabus and similar soils: 50 percent

Rock outcrop: 30 percent

Dissimilar minor components: 20 percent

Characteristics of Vabus

Setting

Landform: Mountain slopes, glacial-trough valleys

Properties and qualities

Parent material: Dense glacial till with an admixture of volcanic ash

Slope range: 45 to 70 percent

Depth to restrictive feature: 20 to 40 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 35 inches (see Water Features table)

Available water capacity (entire profile): Low (about 4.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 4 inches; moderately decomposed plant material

4 to 7 inches; stony ashy sandy loam

7 to 13 inches; ashy sandy loam

13 to 18 inches; very gravelly ashy sandy loam

18 to 35 inches; very gravelly ashy sandy loam

35 to 60 inches; very gravelly loamy sand

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 45 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Domerie soils

Percentage of map unit: 5 percent

Gilpar soils

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

336—Ronsel stony ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

3—Olympic and Cascade Mountains

Elevation: 3,800 to 5,700 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Ronsel and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ronsel

Setting

Landform: Mountain slopes, glacial valley walls

Properties and qualities

Parent material: Glacial till with an influence of volcanic ash

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; moderately decomposed plant material

1 to 4 inches; stony ashy sandy loam

4 to 9 inches; gravelly ashy sandy loam

9 to 18 inches; very gravelly ashy sandy loam

18 to 60 inches; very gravelly sandy loam

Dissimilar Minor Components

Esmeralda soils

Percentage of map unit: 10 percent

Vanepps soils

Percentage of map unit: 5 percent

Major Use

Timber production

338—*Gilpar ashy sandy loam, 5 to 25 percent slopes*

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 2,200 to 4,200 feet

Mean annual precipitation: 55 to 90 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Gilpar and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Gilpar

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium with an admixture of volcanic ash

Slope range: 5 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 3 inches; ashy sandy loam

3 to 9 inches; ashy sandy loam

9 to 21 inches; gravelly ashy loam

21 to 35 inches; very cobbly ashy loam

35 to 60 inches; very cobbly ashy loam

Dissimilar Minor Components

Nimue soils

Percentage of map unit: 10 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

346—Gilpar ashy sandy loam, 25 to 45 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,200 to 5,500 feet

Mean annual precipitation: 55 to 90 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Gilpar and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Gilpar

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium with an admixture of volcanic ash

Slope range: 25 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 3 inches; ashy sandy loam

3 to 9 inches; ashy sandy loam

9 to 21 inches; gravelly ashy loam

21 to 35 inches; very cobbly ashy loam

35 to 60 inches; very cobbly ashy loam

Dissimilar Minor Components

Nimue soils

Percentage of map unit: 5 percent

Stirrup soils

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

347—Gilpar ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

*Major land resource area (MLRA): 3—Olympic and Cascade Mountains;
6—Cascade Mountains, Eastern Slope*

Elevation: 2,200 to 5,500 feet

Mean annual precipitation: 55 to 90 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 35 to 85 days

Map Unit Composition

Gilpar and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Gilpar

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium with an admixture of volcanic ash

Slope range: 45 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 2 inches; moderately decomposed plant material

2 to 3 inches; ashy sandy loam

3 to 9 inches; ashy sandy loam

9 to 21 inches; gravelly ashy loam

21 to 35 inches; very cobbly ashy loam

35 to 60 inches; very cobbly ashy loam

Dissimilar Minor Components

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Stirrup soils

Percentage of map unit: 5 percent

Major Use

Timber production

402—Esmeralda-Rock outcrop association, 35 to 65 percent slopes, bouldery

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 4,000 to 7,000 feet

Mean annual precipitation: 50 to 75 inches

Mean annual air temperature: 37 to 41 degrees F

Frost-free period: 60 to 90 days

Map Unit Composition

Esmeralda, bouldery surface, and similar soils: 45 percent

Rock outcrop: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Esmeralda, Bouldery Surface

Setting

Landform: Mountainsides

Properties and qualities

Parent material: Residuum and colluvium with an admixture of volcanic ash

Slope range: 35 to 65 percent

Percentage of surface area covered with boulders: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Whitebark pine/common juniper (CAS421)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 3 inches; very gravelly ashy loam

3 to 10 inches; very cobbly ashy sandy loam

10 to 44 inches; very cobbly ashy sandy loam

44 to 60 inches; extremely cobbly sandy loam

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 35 to 65 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Vanepps soils

Percentage of map unit: 10 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

404—Polallie-Rock outcrop complex, 30 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,500 to 6,000 feet

Mean annual precipitation: 60 to 90 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Polallie and similar soils: 55 percent

Rock outcrop: 35 percent

Dissimilar minor components: 10 percent

Characteristics of Polallie

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 30 to 65 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Mountain hemlock/pink mountainheath-
Cascade huckleberry (CMS354)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 2 inches; gravelly ashy sandy loam

2 to 3 inches; gravelly ashy sandy loam

3 to 14 inches; very gravelly ashy sandy loam

14 to 26 inches; very gravelly ashy loam

26 to 38 inches; extremely gravelly ashy sandy loam

38 to 47 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 65 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Lemah soils

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Timber production

405—Pollalie gravelly ashy sandy loam, cool, 10 to 35 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 4,100 to 5,500 feet

Mean annual precipitation: 60 to 85 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Polallie and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Polallie

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 10 to 35 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Forest Service plant community class: Mountain hemlock/beargrass-low huckleberry (CMF131)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 2 inches; gravelly ashy sandy loam

2 to 3 inches; gravelly ashy sandy loam

3 to 14 inches; very gravelly ashy sandy loam

14 to 26 inches; very gravelly ashy loam

26 to 38 inches; extremely gravelly ashy sandy loam

38 to 47 inches; unweathered bedrock

Dissimilar Minor Components

Vabus soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

406—Polallie gravelly ashy sandy loam, 35 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains; 6—Cascade Mountains, Eastern Slope

Elevation: 3,500 to 5,700 feet

Mean annual precipitation: 60 to 85 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 40 to 85 days

Map Unit Composition

Polallie and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Polallie

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 35 to 65 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Mountain hemlock/rusty menziesia-big huckleberry (CMS257)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 2 inches; gravelly ashy sandy loam

2 to 3 inches; gravelly ashy sandy loam

3 to 14 inches; very gravelly ashy sandy loam

14 to 26 inches; very gravelly ashy loam

26 to 38 inches; extremely gravelly ashy sandy loam

38 to 47 inches; unweathered bedrock

Dissimilar Minor Components

Vabus soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Timber production

408—Rock outcrop-Domerie complex, 60 to 75 percent slopes

Map Unit Setting

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,600 to 5,800 feet

Mean annual precipitation: 50 to 70 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Rock outcrop: 55 percent
Domerie and similar soils: 35 percent
Dissimilar minor component: 10 percent

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 60 to 75 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Characteristics of Domerie

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from phyllite and schist with volcanic ash in the upper part

Slope range: 60 to 70 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; gravelly ashy sandy loam

4 to 9 inches; channery ashy sandy loam

9 to 34 inches; very channery ashy sandy loam

34 to 41 inches; extremely channery ashy sandy loam

41 to 56 inches; extremely channery sandy loam

56 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Vabus soils

Percentage of map unit: 10 percent

Major Use

Timber production

409—Domerie gravelly ashy sandy loam, 45 to 65 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 3,600 to 5,800 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 35 to 80 days

Map Unit Composition

Domerie, warm, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Domerie, Warm

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Colluvium and residuum derived from phyllite and schist with volcanic ash in the upper part

Slope range: 45 to 65 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Pacific silver fir/rusty menziesia (CFS542)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 4 inches; gravelly ashy sandy loam

4 to 9 inches; channery ashy sandy loam

9 to 34 inches; very channery ashy sandy loam

34 to 41 inches; extremely channery ashy sandy loam

41 to 56 inches; extremely channery sandy loam

56 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Chinkmin soils

Percentage of map unit: 5 percent

Nimue soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Thetis soils

Percentage of map unit: 5 percent

Major Use

Timber production

410—Tanaha ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Tanaha and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Tanaha

Setting

Landform: Flood plains, inset fans, fan skirts, fan aprons

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 38 to 45 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 3 millimhos per centimeters)

Sodicity (maximum): Sodium adsorption ratio about 5

Available water capacity (entire profile): Moderate (about 6.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Typical profile

0 to 7 inches; ashy loam

7 to 12 inches; ashy loam

12 to 32 inches; clay loam

32 to 38 inches; cemented material

38 to 60 inches; loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

411—Argabak very cobbly loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 3,800 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 120 to 170 days

Map Unit Composition

Argabak and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 6 inches; extremely gravelly loam

6 to 16 inches; unweathered bedrock

Dissimilar Minor Components

Blint soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

414—Argabak very cobbly loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 3,400 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 120 to 170 days

Map Unit Composition

Argabak and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 6 inches; extremely gravelly loam

6 to 16 inches; unweathered bedrock

Dissimilar Minor Components

Blint soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

415—Benwy silt loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Benwy and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Benwy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Loess, alluvium, and colluvium over a duripan

Slope range: 5 to 10 percent

Depth to restrictive feature: 40 to 60 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): Moderate (about 8.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 10 inches; silt loam

10 to 18 inches; silt loam

18 to 33 inches; gravelly silt loam

33 to 45 inches; gravelly silt loam

45 to 55 inches; cemented material

Dissimilar Minor Components

Ackna soils

Percentage of map unit: 10 percent

Vanderbilt soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

417—Benwy silt loam, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,600 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Benwy and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Benwy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Loess, alluvium, and colluvium over a duripan

Slope range: 30 to 45 percent

Depth to restrictive feature: 40 to 60 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): Moderate (about 8.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 10 inches; silt loam

10 to 18 inches; silt loam

18 to 33 inches; gravelly silt loam

33 to 45 inches; gravelly silt loam

45 to 55 inches; cemented material

Dissimilar Minor Components

Clerf soils

Percentage of map unit: 5 percent

Selah soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

422—Clerf very cobbly loam, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,300 to 3,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Clerf and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 30 to 45 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Dissimilar Minor Components

Neviot soils

Percentage of map unit: 10 percent

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

424—Cleman very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,200 feet

Mean annual precipitation: 8 to 12 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 135 to 200 days

Map Unit Composition

Cleman and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Cleman

Setting

Landform: Flood plains, alluvial fans

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 8.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 2e

Ecological site: LOAMY BOTTOM 9-15 PZ (R008XY402WA)

Typical profile

0 to 14 inches; very fine sandy loam

14 to 42 inches; stratified loamy fine sand to silt loam

42 to 60 inches; stratified sand to silt loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 5 percent

Tanaha soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

427—Clerf very cobbly loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,300 to 3,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Clerf and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Dissimilar Minor Components

Neviot soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Wipple soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

429—Grinrod-Horseflat complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Elevation: 900 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Grinrod and similar soils: 55 percent

Horseflat and similar soils: 30 percent

Dissimilar minor components: 15 percent

Characteristics of Grinrod

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 10 inches; very gravelly loam

10 to 27 inches; very gravelly loam

27 to 37 inches; unweathered bedrock

Characteristics of Horseflat

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly loam

9 to 16 inches; extremely gravelly loam

16 to 26 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Esquatzel soils

Percentage of map unit: 5 percent

Weirman soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

431—Grinrod-Horseflat-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 600 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Grinrod and similar soils: 35 percent

Horseflat and similar soils: 30 percent

Rubble land: 20 percent

Dissimilar minor components: 15 percent

Characteristics of Grinrod

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 10 inches; very gravelly loam

10 to 27 inches; very gravelly loam

27 to 37 inches; unweathered bedrock

Characteristics of Horseflat

Setting

Landform: Hillslopes, walls of canyons

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 30 to 75 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly loam

9 to 16 inches; extremely gravelly loam

16 to 26 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Esquatzel soils

Percentage of map unit: 5 percent

Weirman soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

433—Kiona-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Kiona and similar soils: 55 percent

Rubble land: 30 percent

Dissimilar minor components: 15 percent

Characteristics of Kiona

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt mixed with loess in the upper part

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL STONY 6-10 PZ (R007XY203WA)

Typical profile

0 to 4 inches; very stony loam

4 to 21 inches; very gravelly loam

21 to 60 inches; extremely gravelly loam

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 10 percent

Sagehill soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

434—Laufer-Thiessen complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 2,000 to 4,400 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 100 to 145 days

Map Unit Composition

Laufer and similar soils: 45 percent

Thiessen and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Laufer

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 16-24 PZ (R006XY201WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 7 inches; very gravelly clay loam

7 to 10 inches; very cobbly clay loam

10 to 15 inches; extremely cobbly clay loam

15 to 25 inches; unweathered bedrock

Characteristics of Thiessen

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 3 inches; very cobbly loam
3 to 9 inches; very gravelly clay loam
9 to 22 inches; extremely gravelly clay loam
22 to 32 inches; unweathered bedrock

Dissimilar Minor Components

McDaniel soils

Percentage of map unit: 5 percent

Rock Creek soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

438—Blint very cobbly ashy loam, 45 to 60 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 2,330 to 2,800 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 120 to 135 days

Map Unit Composition

Blint and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Blint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Volcanic ash over colluvium derived from basalt
Slope range: 45 to 60 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; very cobbly ashy loam

4 to 10 inches; very gravelly ashy loam

10 to 18 inches; very gravelly loam

18 to 22 inches; extremely cobbly silt loam

22 to 32 inches; unweathered bedrock

Dissimilar Minor Components

Clerf soils

Percentage of map unit: 5 percent

Palerf soils

Percentage of map unit: 5 percent

Rollinger soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

440—Nitzel ashy silt loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nitzel and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nitzel

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 29 to 46 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy silt loam

8 to 29 inches; ashy loam

29 to 46 inches; loam

46 to 60 inches; sandy loam

Dissimilar Minor Components

Cleman soils

Percentage of map unit: 5 percent

Manastash soils

Percentage of map unit: 5 percent

Mitta soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

450—Argixerolls-Durixerolls complex, 30 to 70 percent south slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,600 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Argixerolls, south slopes, and similar soils: 45 percent

Durixerolls, south slopes, and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Argixerolls, South Slopes

Setting

Landform: Terrace escarpments, hillslopes

Properties and qualities

Parent material: Alluvium and/or loess

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): High (about 9.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; cobbly clay loam

5 to 37 inches; silty clay loam

37 to 60 inches; gravelly clay loam

Characteristics of Durixerolls, South Slopes

Setting

Landform: Alluvial fan escarpments

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 30 to 65 percent

Depth to restrictive feature: 10 to 40 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very gravelly loam

9 to 12 inches; very gravelly loam

12 to 21 inches; extremely gravelly loam

21 to 31 inches; cemented material

31 to 60 inches; cemented material

Dissimilar Minor Components

Rollinger soils

Percentage of map unit: 10 percent

Selah soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

452—Argabak-Zen-Grinrod complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 170 days

Map Unit Composition

Argabak and similar soils: 40 percent

Zen and similar soils: 30 percent

Grinrod and similar soils: 20 percent

Dissimilar minor components: 10 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 6 inches; extremely gravelly loam

6 to 16 inches; unweathered bedrock

Characteristics of Zen

Setting

Landform: Structural benches

Properties and qualities

Parent material: Loess and slope alluvium over basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 7 inches; silt loam
7 to 12 inches; silt loam
12 to 27 inches; clay loam
27 to 30 inches; gravelly clay loam
30 to 40 inches; unweathered bedrock

Characteristics of Grinrod

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part
Slope range: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 10 inches; very gravelly loam
10 to 27 inches; very gravelly loam
27 to 37 inches; unweathered bedrock

Dissimilar Minor Components

Camaspatch soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

456—Cheviot-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 3,000 feet

Mean annual precipitation: 9 to 13 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Cheviot and similar soils: 50 percent

Rubble land: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Cheviot

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 4.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 16 inches; very cobbly loam

16 to 44 inches; very cobbly loam

44 to 49 inches; extremely cobbly loam

49 to 60 inches; extremely cobbly loam

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Drino soils

Percentage of map unit: 5 percent

Haploxerolls

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

457—Cheviot very cobbly loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 800 to 2,000 feet

Mean annual precipitation: 9 to 13 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Cheviot and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Cheviot

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 4.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 16 inches; very cobbly loam

16 to 44 inches; very cobbly loam

44 to 49 inches; extremely cobbly loam

49 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Lainand soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Windry soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

458—Clerf-Vantage-Cheviot complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Clerf and similar soils: 35 percent

Vantage and similar soils: 25 percent

Cheviot and similar soils: 25 percent

Dissimilar minor components: 15 percent

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Characteristics of Cheviot

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 4.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 16 inches; very cobbly loam
16 to 44 inches; very cobbly loam
44 to 49 inches; extremely cobbly loam
49 to 60 inches; extremely cobbly loam

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 10 percent

Caliralls soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

460—Neviot-Palerf-Vantage complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,100 to 3,200 feet
Mean annual precipitation: 9 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 170 days

Map Unit Composition

Neviot and similar soils: 40 percent
Palerf and similar soils: 25 percent
Vantage and similar soils: 20 percent
Dissimilar minor components: 15 percent

Characteristics of Neviot

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part
Slope range: 30 to 60 percent
Percentage of surface area covered with stones: 0.01 to 0.1 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Moderate (about 6.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; gravelly ashy loam

6 to 12 inches; gravelly ashy loam

12 to 22 inches; very gravelly loam

22 to 40 inches; very gravelly loam

40 to 49 inches; very gravelly loam

49 to 60 inches; very gravelly loam

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 25 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 27 inches; very gravelly clay

27 to 35 inches; extremely gravelly clay

35 to 45 inches; unweathered bedrock

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Dissimilar Minor Components

Clerf soils

Percentage of map unit: 10 percent

Tanksel soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

461—Kiona very stony loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 1,800 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Kiona and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Kiona

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt mixed with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very stony loam

4 to 21 inches; very gravelly loam

21 to 60 inches; extremely gravelly loam

Dissimilar Minor Components

Drino soils

Percentage of map unit: 5 percent

Fortyday soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

465—Horseflat very cobbly loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 100 to 170 days

Map Unit Composition

Horseflat and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Horseflat

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly loam

9 to 16 inches; extremely gravelly loam

16 to 26 inches; unweathered bedrock

Dissimilar Minor Components

Marlic soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

466—Benwy silt loam, 10 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,600 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Benwy and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Benwy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Loess, alluvium, and colluvium over a duripan

Slope range: 10 to 15 percent

Depth to restrictive feature: 40 to 60 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): Moderate (about 8.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 10 inches; silt loam

10 to 18 inches; silt loam

18 to 33 inches; gravelly silt loam

33 to 45 inches; gravelly silt loam

45 to 55 inches; cemented material

Dissimilar Minor Components

Clerf soils

Percentage of map unit: 5 percent

Grinrod soils

Percentage of map unit: 5 percent

Horseflat soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

470—Weirman very cobbly sandy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,300 to 3,100 feet

Mean annual precipitation: 7 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 195 days

Map Unit Composition

Weirman and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Typical profile

0 to 4 inches; very cobbly sandy loam

4 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Kayak soils

Percentage of map unit: 10 percent

Major Use

Livestock grazing

476—Ralock-Horseflat complex, 30 to 65 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Elevation: 1,000 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Ralock and similar soils: 50 percent

Horseflat and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Ralock

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt and alluvium with loess and volcanic ash in the upper part

Slope range: 30 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Moderate (about 8.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; ashy silt loam

4 to 14 inches; ashy silt loam

14 to 27 inches; silt loam

27 to 36 inches; gravelly loam

36 to 60 inches; gravelly loam

Characteristics of Horseflat

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 65 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly loam

9 to 16 inches; extremely gravelly loam

16 to 26 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Drino soils

Percentage of map unit: 5 percent

Rollinger soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

480—Nanum ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nanum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nanum

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 21 to 28 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy loam

8 to 15 inches; ashy loam

15 to 28 inches; ashy clay loam

28 to 35 inches; very gravelly clay loam

35 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Brickmill soils

Percentage of map unit: 5 percent

Nack soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

481—Nanum ashy loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nanum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nanum

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 21 to 28 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy loam

8 to 15 inches; ashy loam

15 to 28 inches; ashy clay loam

28 to 35 inches; very gravelly clay loam

35 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Nack soils

Percentage of map unit: 10 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

482—Rollinger ashy silt loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Rollinger and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Rollinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with volcanic ash

Slope range: 5 to 10 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 11.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 3e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; ashy silt loam

6 to 11 inches; ashy silt loam

11 to 32 inches; silty clay loam

32 to 41 inches; silt loam

41 to 54 inches; silt loam

54 to 60 inches; silt loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

485—Rollinger ashy silt loam, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Rollinger and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Rollinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with volcanic ash

Slope range: 30 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 11.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; ashy silt loam

6 to 11 inches; ashy silt loam

11 to 32 inches; silty clay loam

32 to 41 inches; silt loam

41 to 54 inches; silt loam

54 to 60 inches; silt loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

487—Rollinger ashy silt loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Rollinger and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Rollinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with volcanic ash

Slope range: 2 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 11.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 2e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; ashy silt loam

6 to 11 inches; ashy silt loam

11 to 32 inches; silty clay loam

32 to 41 inches; silt loam

41 to 54 inches; silt loam

54 to 60 inches; silt loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

489—Rollinger ashy silt loam, 45 to 60 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Rollinger and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Rollinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with volcanic ash

Slope range: 45 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 11.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; ashy silt loam

6 to 11 inches; ashy silt loam

11 to 32 inches; silty clay loam

32 to 41 inches; silt loam

41 to 54 inches; silt loam

54 to 60 inches; silt loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

492—Rollinger ashy silt loam, 10 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Rollinger and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Rollinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with volcanic ash

Slope range: 10 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 11.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; ashy silt loam
6 to 11 inches; ashy silt loam
11 to 32 inches; silty clay loam
32 to 41 inches; silt loam
41 to 54 inches; silt loam
54 to 60 inches; silt loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

493—Rollinger ashy silt loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Rollinger and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Rollinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with volcanic ash

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 11.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; ashy silt loam
6 to 11 inches; ashy silt loam
11 to 32 inches; silty clay loam
32 to 41 inches; silt loam
41 to 54 inches; silt loam
54 to 60 inches; silt loam

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

494—Caliralls silt loam, 10 to 15 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 100 to 170 days

Map Unit Composition

Caliralls and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Caliralls

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt
Slope range: 10 to 15 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Moderate (about 8.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Land capability subclass (irrigated): 4e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; silt loam
5 to 12 inches; silt loam

12 to 31 inches; gravelly loam
31 to 52 inches; gravelly silt loam
52 to 60 inches; very gravelly loam

Dissimilar Minor Components

Nanum soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Zen soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

495—Caliralls-Clerf complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Caliralls and similar soils: 45 percent

Clerf and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Caliralls

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 8.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 6e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; silt loam

5 to 12 inches; silt loam

12 to 31 inches; gravelly loam
31 to 52 inches; gravelly silt loam
52 to 60 inches; very gravelly loam

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Dissimilar Minor Components

Vantage soils

Percentage of map unit: 10 percent

Argabak soils

Percentage of map unit: 5 percent

Camaspatch soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

497—Camaspatch very cobbly loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,300 to 3,900 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 95 percent

Dissimilar minor component: 5 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Loess, colluvium and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

498—Caliralls-Clerf complex, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,100 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Caliralls and similar soils: 50 percent

Clerf and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Caliralls

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 30 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Soil Survey of Kittitas County Area, Washington

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Moderate (about 8.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; silt loam
5 to 12 inches; silt loam
12 to 31 inches; gravelly loam
31 to 52 inches; gravelly silt loam
52 to 60 inches; very gravelly loam

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part
Slope range: 30 to 45 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam
9 to 12 inches; very cobbly clay
12 to 24 inches; very cobbly clay
24 to 34 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

500—Vantage very cobbly loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 3,800 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Dissimilar Minor Components

Pachneum soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Shinn soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

502—Vantage very cobbly loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 3,800 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Dissimilar Minor Components

Pachneum soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Shinn soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

503—Terlan-Durtash-Selah complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Terlan and similar soils: 40 percent

Durtash and similar soils: 35 percent

Selah and similar soils: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Terlan

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Loess over alluvium

Slope range: 5 to 15 percent

Depth to restrictive feature: 10 to 20 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; gravelly loam

7 to 15 inches; gravelly clay loam

15 to 18 inches; very gravelly loam

18 to 26 inches; cemented material

26 to 60 inches; cemented material

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 5 to 15 percent

Soil Survey of Kittitas County Area, Washington

Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; gravelly loam

5 to 14 inches; very gravelly clay loam

14 to 19 inches; extremely gravelly clay

19 to 29 inches; cemented material

29 to 60 inches; cemented material

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 5 to 15 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam

9 to 17 inches; silty clay loam

17 to 21 inches; cobbly clay loam

21 to 31 inches; cemented material

31 to 60 inches; cemented material

Dissimilar Minor Component

Benwy soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

509—Vantage-Clerf complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 3,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 50 percent

Clerf and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Dissimilar Minor Components

Lainand soils

Percentage of map unit: 5 percent

Tanksel soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

511—Vantage-Clerf complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 50 percent

Clerf and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam
5 to 8 inches; very cobbly clay loam
8 to 18 inches; very cobbly clay
18 to 28 inches; unweathered bedrock

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam
9 to 12 inches; very cobbly clay
12 to 24 inches; very cobbly clay
24 to 34 inches; unweathered bedrock

Dissimilar Minor Components

Lainand soils

Percentage of map unit: 5 percent

Tankseil soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

512—Vantage-Clerf complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 50 percent

Clerf and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Dissimilar Minor Components

Lainand soils

Percentage of map unit: 5 percent

Tanksel soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

513—Meloza-Cowiche complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,300 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Meloza and similar soils: 45 percent

Cowiche and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Meloza

Setting

Landform: Alluvial fans, fan piedmonts

Properties and qualities

Parent material: Residuum derived from interbedded sedimentary rock

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): High (about 9.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 4 inches; clay loam

4 to 30 inches; clay loam

30 to 42 inches; clay loam

42 to 60 inches; sandy clay loam

Characteristics of Cowiche

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and residuum

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): High (about 10 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Land capability subclass (irrigated): 6e
Ecological site: SANDY 10-16 PZ (R008XY501WA)

Typical profile

0 to 15 inches; loam
15 to 35 inches; clay loam
35 to 51 inches; clay loam
51 to 60 inches; sandy loam

Dissimilar Minor Components

Clerf soils

Percentage of map unit: 5 percent

Horseflat soils

Percentage of map unit: 5 percent

Selah soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

516—Selah loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 2,400 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Selah and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium
Slope range: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to an indurated duripan
Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s
Land capability subclass (irrigated): 3s
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam
9 to 17 inches; silty clay loam
17 to 21 inches; cobbly clay loam
21 to 31 inches; cemented material
31 to 60 inches; cemented material

Dissimilar Minor Components

Terlan soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

517—Selah loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 2,400 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Selah and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium
Slope range: 5 to 10 percent
Depth to restrictive feature: 20 to 40 inches to an indurated duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam

9 to 17 inches; silty clay loam

17 to 21 inches; cobbly clay loam

21 to 31 inches; cemented material

31 to 60 inches; cemented material

Dissimilar Minor Components

Terlan soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

519—Selah loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Selah and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s
Land capability subclass (irrigated): 3s
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam
9 to 17 inches; silty clay loam
17 to 21 inches; cobbly clay loam
21 to 31 inches; cemented material
31 to 60 inches; cemented material

Dissimilar Minor Components

Terlan soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

523—Terlan gravelly loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,600 to 2,600 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 46 to 49 degrees F
Frost-free period: 130 to 180 days

Map Unit Composition

Terlan and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Terlan

Setting

Landform: Fan remnants, alluvial fans

Properties and qualities

Parent material: Loess over alluvium
Slope range: 0 to 2 percent
Depth to restrictive feature: 10 to 20 inches to an indurated duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; gravelly loam

7 to 15 inches; gravelly clay loam

15 to 18 inches; very gravelly loam

18 to 26 inches; cemented material

26 to 60 inches; cemented material

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

524—Terlan gravelly loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 49 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Terlan and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Terlan

Setting

Landform: Fan remnants, alluvial fans

Properties and qualities

Parent material: Loess over alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; gravelly loam

7 to 15 inches; gravelly clay loam

15 to 18 inches; very gravelly loam

18 to 26 inches; cemented material

26 to 60 inches; cemented material

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

525—Terlan gravelly loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 2,600 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 49 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Terlan and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Terlan

Setting

Landform: Fan remnants, alluvial fans

Properties and qualities

Parent material: Loess over alluvium

Slope range: 5 to 10 percent

Depth to restrictive feature: 10 to 20 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; gravelly loam

7 to 15 inches; gravelly clay loam

15 to 18 inches; very gravelly loam

18 to 26 inches; cemented material

26 to 60 inches; cemented material

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

532—Selah-Terlan complex, 10 to 15 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Selah and similar soils: 45 percent

Terlan and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 10 to 15 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam

9 to 17 inches; silty clay loam

17 to 21 inches; cobbly clay loam

21 to 31 inches; cemented material

31 to 60 inches; cemented material

Characteristics of Terlan

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Loess over alluvium

Slope range: 10 to 15 percent

Depth to restrictive feature: 10 to 20 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; gravelly loam

7 to 15 inches; gravelly clay loam

15 to 18 inches; very gravelly loam

18 to 26 inches; cemented material

26 to 60 inches; cemented material

Dissimilar Minor Components

Cleman soils

Percentage of map unit: 5 percent

Durtash soils

Percentage of map unit: 5 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

533—Selah loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,000 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Selah and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 6e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam

9 to 17 inches; silty clay loam

17 to 21 inches; cobbly clay loam

21 to 31 inches; cemented material

31 to 60 inches; cemented material

Dissimilar Minor Components

Terlan soils

Percentage of map unit: 10 percent

Benwy soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

535—Zen silt loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Zen and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Zen

Setting

Landform: Structural benches

Properties and qualities

Parent material: Loess and slope alluvium over basalt

Slope range: 5 to 10 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 3e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 7 inches; silt loam

7 to 12 inches; silt loam

12 to 27 inches; clay loam

27 to 30 inches; gravelly clay loam

30 to 40 inches; unweathered bedrock

Dissimilar Minor Components

Renslow soils

Percentage of map unit: 10 percent

Marlic soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

538—Zen silt loam, 10 to 15 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Zen and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Zen

Setting

Landform: Structural benches

Properties and qualities

Parent material: Loess and slope alluvium over basalt

Slope range: 10 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 7 inches; silt loam

7 to 12 inches; silt loam

12 to 27 inches; clay loam

27 to 30 inches; gravelly clay loam

30 to 40 inches; unweathered bedrock

Dissimilar Minor Components

Renslow soils

Percentage of map unit: 10 percent

Marlic soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

539—Zen silt loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Zen and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Zen

Setting

Landform: Structural benches

Properties and qualities

Parent material: Loess and slope alluvium over basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 7 inches; silt loam

7 to 12 inches; silt loam

12 to 27 inches; clay loam

27 to 30 inches; gravelly clay loam

30 to 40 inches; unweathered bedrock

Dissimilar Minor Components

Renslow soils

Percentage of map unit: 10 percent

Marlic soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

553—Ralock ashy silt loam, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Ralock and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Ralock

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt and alluvium with loess and volcanic ash in the upper part

Slope range: 30 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Moderate (about 8.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; ashy silt loam

4 to 14 inches; ashy silt loam

14 to 27 inches; silt loam

27 to 36 inches; gravelly loam

36 to 60 inches; gravelly loam

Dissimilar Minor Components

Clerf soils

Percentage of map unit: 10 percent

Marlic soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

554—*Pachneum* ashy loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, piedmont slopes

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Pachneum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Pachneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2e

Land capability subclass (irrigated): 2e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 26 inches; clay loam

26 to 33 inches; clay loam

33 to 47 inches; clay loam

47 to 60 inches; clay loam

Dissimilar Minor Components

Mitta soils

Percentage of map unit: 5 percent

Reelow soils

Percentage of map unit: 5 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

557—*Pachneum* ashy loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Dissected plateaus

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 1,500 to 2,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Pachneum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Pachneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 6e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 26 inches; clay loam

26 to 33 inches; clay loam

33 to 47 inches; clay loam

47 to 60 inches; clay loam

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 10 percent

Varodale soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

558—Argixerolls-Durixerolls complex, 30 to 70 percent north slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,600 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Argixerolls, north slopes, and similar soils: 50 percent

Durixerolls, north slopes, and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Argixerolls, North Slopes

Setting

Landform: Terrace escarpments, hillslopes

Properties and qualities

Parent material: Alluvium and/or loess

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): High (about 10.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 14 inches; silt loam

14 to 42 inches; gravelly silty clay loam

42 to 60 inches; gravelly clay loam

Characteristics of Durixerolls, North Slopes

Setting

Landform: Alluvial fan escarpments

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 30 to 65 percent

Depth to restrictive feature: 10 to 40 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Very low (about 2.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very gravelly loam
9 to 12 inches; very gravelly loam
12 to 21 inches; extremely gravelly loam
21 to 31 inches; cemented material
31 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Reeser soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

561—Elkheights loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope
Elevation: 1,800 to 2,900 feet
Mean annual precipitation: 15 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Elkheights and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Elkheights

Setting

Landform: Hillslopes, moraines

Properties and qualities

Parent material: Alluvium and loess over basal till
Slope range: 15 to 30 percent
Depth to restrictive feature: 40 to 60 inches to dense material
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; loam

8 to 19 inches; loam

19 to 41 inches; loam

41 to 56 inches; gravelly loam

56 to 60 inches; very gravelly sandy clay loam

Dissimilar Minor Components

Pachneum soils

Percentage of map unit: 5 percent

Shinn soils

Percentage of map unit: 5 percent

Swauk soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

563—Mendian very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,100 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Mendian and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Mendian

Setting

Landform: Terraces

Properties and qualities

Parent material: Outwash with loess in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2c

Land capability subclass (irrigated): 2c

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; very fine sandy loam

6 to 13 inches; very fine sandy loam

13 to 22 inches; sandy clay loam

22 to 38 inches; sandy clay loam

38 to 46 inches; very gravelly sandy clay

46 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Reeser soils

Percentage of map unit: 10 percent

Millhouse soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

570—Wipple cobbly clay loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 3,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Wipple and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Wipple

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium derived from basalt with a minor amount of loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 6e

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 7 inches; cobbly clay loam

7 to 11 inches; very gravelly clay loam

11 to 30 inches; very gravelly clay

30 to 50 inches; very cobbly clay loam

50 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Clerf soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

571—Wipple cobbly clay loam, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 3,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Wipple and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Wipple

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium derived from basalt with a minor amount of loess in the upper part

Slope range: 30 to 45 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 4.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 7 inches; cobbly clay loam
7 to 11 inches; very gravelly clay loam
11 to 30 inches; very gravelly clay
30 to 50 inches; very cobbly clay loam
50 to 60 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Clerf soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

580—Woldale clay loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 2,300 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Woldale and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Woldale

Setting

Landform: Swales of fan skirts, depressions of fan aprons

Properties and qualities

Parent material: Alluvium
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 16 to 20 inches (see Water Features table)
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Moderate (about 7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w
Land capability subclass (irrigated): 3w
Ecological site: SEMIWET MEADOW 10-16 PZ (R008XY602WA)

Typical profile

0 to 5 inches; clay loam
5 to 31 inches; clay
31 to 43 inches; very gravelly clay
43 to 60 inches; extremely cobbly clay loam

Dissimilar Minor Components

Nack soils

Percentage of map unit: 5 percent

Nanum soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

584—Varodale clay, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau
Elevation: 1,500 to 2,500 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Varodale and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Varodale

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Moderately well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): About 38 to 44 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 8.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Typical profile

0 to 22 inches; clay

22 to 38 inches; clay

38 to 44 inches; clay

44 to 60 inches; sandy clay

Dissimilar Minor Components

Nack soils

Percentage of map unit: 5 percent

Nanum soils

Percentage of map unit: 5 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Use

Cropland

585—Varodale clay, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,300 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 110 to 140 days

Map Unit Composition

Varodale and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Varodale

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash

Slope range: 2 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 38 to 44 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 8.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Typical profile

0 to 22 inches; clay

22 to 38 inches; clay

38 to 44 inches; clay

44 to 60 inches; sandy clay

Dissimilar Minor Components

Nack soils

Percentage of map unit: 5 percent

Nanum soils

Percentage of map unit: 5 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Use

Cropland

586—Vanderbilt ashy loam, moderately wet, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Vanderbilt, moderately wet, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Vanderbilt, Moderately Wet

Setting

Landform: Outwash terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 18 to 42 inches (see Water Features table)

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Ecological site: LOAMY BOTTOM 19-16 PZ (R008XY402WA)

Typical profile

0 to 8 inches; ashy loam

8 to 28 inches; ashy loam

28 to 38 inches; clay loam

38 to 60 inches; clay loam

Dissimilar Minor Components

Nack soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Varodale soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

587—Argixerolls, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Argixerolls and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Argixerolls

Setting

Landform: Terrace escarpments, hillslopes

Properties and qualities

Parent material: Alluvium and/or loess

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): High (about 10.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 6e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 17 inches; silt loam

17 to 49 inches; silty clay loam

49 to 60 inches; gravelly clay loam

Dissimilar Minor Components

Lablue soils

Percentage of map unit: 5 percent

Reelow soils

Percentage of map unit: 5 percent

Reeser soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

589—Nack-Brickmill complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nack and similar soils: 60 percent

Brickmill and similar soils: 30 percent

Dissimilar minor components: 10 percent

Characteristics of Nack

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with a mantle of volcanic ash

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 15 to 39 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3
Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w
Land capability subclass (irrigated): 4w

Typical profile

0 to 6 inches; gravelly ashy loam
6 to 15 inches; clay loam
15 to 60 inches; extremely gravelly sandy clay

Characteristics of Brickmill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 0 to 5 percent
Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification
Drainage class: Somewhat poorly drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 28 to 38 inches (see Water Features table)
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w
Land capability subclass (irrigated): 3w

Typical profile

0 to 12 inches; gravelly ashy loam
12 to 28 inches; very gravelly ashy sandy loam
28 to 38 inches; extremely gravelly sandy loam
38 to 49 inches; extremely gravelly sandy loam
49 to 60 inches; extremely gravelly loamy coarse sand

Dissimilar Minor Components

Nanum soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

590—Brickmill-Nanum complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau

Soil Survey of Kittitas County Area, Washington

Elevation: 1,500 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brickmill and similar soils: 45 percent

Nanum and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Brickmill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 38 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 12 inches; gravelly ashy loam

12 to 28 inches; very gravelly ashy sandy loam

28 to 38 inches; extremely gravelly sandy loam

38 to 49 inches; extremely gravelly sandy loam

49 to 60 inches; extremely gravelly loamy coarse sand

Characteristics of Nanum

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 21 to 28 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w
Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy loam
8 to 15 inches; ashy loam
15 to 28 inches; ashy clay loam
28 to 35 inches; very gravelly clay loam
35 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Nack soils

Percentage of map unit: 10 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

592—Umtanum ashy silt loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 2,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Umtanum and similar soils: 90 percent
Dissimilar minor components: 10 percent

Characteristics of Umtanum

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 2 to 5 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Moderately well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 42 to 48 inches (see Water Features table)
Available water capacity (entire profile): High (about 10.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 2e

Typical profile

0 to 9 inches; ashy silt loam

9 to 16 inches; silty clay loam

16 to 42 inches; silty clay loam

42 to 60 inches; silty clay loam

Dissimilar Minor Components

Modsel soils

Percentage of map unit: 5 percent

Nack soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

593—Camaspatch-Whiskeydick complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,900 to 3,400 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 55 percent

Whiskeydick and similar soils: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Characteristics of Whiskeydick

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 10 inches; very cobbly clay loam

10 to 27 inches; very cobbly clay

27 to 37 inches; unweathered bedrock

Dissimilar Minor Component

Patron soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

594—Camaspach-Whiskeydick complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 3,700 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 50 percent

Whiskeydick and similar soils: 45 percent

Dissimilar minor component: 5 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Characteristics of Whiskeydick

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 10 inches; very cobbly clay loam

10 to 27 inches; very cobbly clay

27 to 37 inches; unweathered bedrock

Dissimilar Minor Component

Patron soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

595—Camaspatch-Whiskeydick complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 1,200 to 4,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 50 percent

Whiskeydick and similar soils: 45 percent

Dissimilar minor component: 5 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 30 to 70 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Characteristics of Whiskeydick

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 10 inches; very cobbly clay loam

10 to 27 inches; very cobbly clay

27 to 37 inches; unweathered bedrock

Dissimilar Minor Component

Patron soil

Percentage of map unit: 5 percent

Major Use

Livestock grazing

598—Zillah silt loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,300 to 1,500 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Zillah and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Zillah

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Soil Survey of Kittitas County Area, Washington

Drainage class: Poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 5 to 7 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Ecological site: LOAMY BOTTOM 19-16 PZ (R008XY402WA)

Typical profile

0 to 7 inches; silt loam

7 to 15 inches; silt loam

15 to 32 inches; silt loam

32 to 51 inches; very fine sandy loam

51 to 60 inches; very gravelly loamy sand

Dissimilar Minor Components

Kayak soils

Percentage of map unit: 5 percent

Nack soils

Percentage of map unit: 5 percent

Weirman soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

601—Brickmill gravelly ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Piedmont slopes

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brickmill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brickmill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Somewhat poorly drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 28 to 38 inches (see Water Features table)
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w
Land capability subclass (irrigated): 3w

Typical profile

0 to 12 inches; gravelly ashy loam
12 to 28 inches; very gravelly ashy sandy loam
28 to 38 inches; extremely gravelly sandy loam
38 to 49 inches; extremely gravelly sandy loam
49 to 60 inches; extremely gravelly loamy coarse sand

Dissimilar Minor Components

Nack soils

Percentage of map unit: 5 percent

Nanum soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

602—Brickmill gravelly ashy loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Piedmont slopes
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Brickmill and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Brickmill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 2 to 5 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 38 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 12 inches; gravelly ashy loam

12 to 28 inches; very gravelly ashy sandy loam

28 to 38 inches; extremely gravelly sandy loam

38 to 49 inches; extremely gravelly sandy loam

49 to 60 inches; extremely gravelly loamy coarse sand

Dissimilar Minor Components

Nack soils

Percentage of map unit: 5 percent

Nanum soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

603—Reeser ashy clay loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 2,400 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Reeser and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Reeser

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Soil Survey of Kittitas County Area, Washington

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; ashy clay loam

6 to 13 inches; ashy clay loam

13 to 22 inches; clay

22 to 26 inches; cemented material

26 to 58 inches; cemented material

58 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Sketter soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

604—Reeser ashy clay loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 2,600 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Reeser and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Reeser

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 5 to 10 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e
Land capability subclass (irrigated): 4e
Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; ashy clay loam
6 to 13 inches; ashy clay loam
13 to 22 inches; clay
22 to 26 inches; cemented material
26 to 58 inches; cemented material
58 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Sketter soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

605—Disage very cobbly loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,200 to 2,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 195 days

Map Unit Composition

Disage and similar soils: 90 percent
Dissimilar minor components: 10 percent

Characteristics of Disage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part
Slope range: 15 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 9 inches; very gravelly clay loam
9 to 18 inches; very cobbly clay loam
18 to 28 inches; unweathered bedrock

Dissimilar Minor Components

Clenage soils

Percentage of map unit: 5 percent

Fortyday soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

606—Disage very cobbly loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,200 to 2,400 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 195 days

Map Unit Composition

Disage and similar soils: 90 percent
Dissimilar minor components: 10 percent

Characteristics of Disage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part
Slope range: 3 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 9 inches; very gravelly clay loam
9 to 18 inches; very cobbly clay loam
18 to 28 inches; unweathered bedrock

Dissimilar Minor Components

Clenage soils

Percentage of map unit: 5 percent

Fortyday soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

607—Disage-Clenage complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 195 days

Map Unit Composition

Disage and similar soils: 45 percent
Clenage and similar soils: 35 percent
Dissimilar minor components: 20 percent

Characteristics of Disage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part
Slope range: 30 to 60 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 9 inches; very gravelly clay loam
9 to 18 inches; very cobbly clay loam
18 to 28 inches; unweathered bedrock

Characteristics of Ctenage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and interbedded sediment mixed with loess

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 16 inches; very gravelly clay loam

16 to 25 inches; very gravelly clay

25 to 35 inches; unweathered bedrock

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 10 percent

Drino soils

Percentage of map unit: 5 percent

Nevo soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

609—Ackna ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Ackna and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Ackna

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium and loess with volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Land capability subclass (irrigated): 2c

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 28 inches; loam

28 to 42 inches; extremely gravelly sandy clay loam

42 to 55 inches; extremely gravelly sandy loam

55 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Brysil soils

Percentage of map unit: 5 percent

Nosal soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

610—Ackna ashy loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Ackna and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Ackna

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium and loess with volcanic ash in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 2e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 28 inches; loam

28 to 42 inches; extremely gravelly sandy clay loam

42 to 55 inches; extremely gravelly sandy loam

55 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Brysil soils

Percentage of map unit: 5 percent

Nosal soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

612—Nitcha ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 10 to 13 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nitcha and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Nitcha

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): High (about 10.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c
Land capability subclass (irrigated): 2c
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 12 inches; ashy loam
12 to 42 inches; sandy clay loam
42 to 60 inches; sandy loam

Dissimilar Minor Components

Brysil soils

Percentage of map unit: 5 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

614—Camaspatch very cobbly loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 2,400 to 3,800 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt
Slope range: 15 to 30 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 9 inches; very gravelly clay loam
9 to 15 inches; extremely cobbly clay
15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Tanksel soils

Percentage of map unit: 5 percent

Whiskeydick soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

618—Nitzel ashy silt loam, gravelly substratum, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 2,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Nitzel, gravelly substratum, and similar soils: 90 percent
Dissimilar minor components: 10 percent

Characteristics of Nitzel, Gravelly Substratum

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Moderately well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: Occasional (see Water Features table)
Frequency of ponding: None

Seasonal high water table (minimum depth): About 29 to 46 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy silt loam

8 to 29 inches; ashy loam

29 to 46 inches; loam

46 to 60 inches; sandy loam

Dissimilar Minor Components

Mitta soils

Percentage of map unit: 5 percent

Tanaha soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

621—Mitta ashy silt loam, flooded, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Mitta, flooded, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Mitta, Flooded

Setting

Landform: Flood plains, fan aprons, fan skirts, inset fans

Properties and qualities

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 34 to 49 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 6

Available water capacity (entire profile): High (about 11.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; ashy silt loam

6 to 15 inches; ashy silt loam

15 to 34 inches; ashy silt loam

34 to 49 inches; silty clay loam

49 to 60 inches; silty clay loam

Dissimilar Minor Components

Nack soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Woldale soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

622—Manastash loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay

25 to 42 inches; cemented material

42 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

623—Manastash loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay

25 to 42 inches; cemented material

42 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

624—Manastash loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 5 to 10 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay

25 to 42 inches; cemented material

42 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

625—Manastash-Durtash complex, 5 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 50 percent

Durtash and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 5 to 10 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Soil Survey of Kittitas County Area, Washington

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e
Land capability subclass (irrigated): 4e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam
5 to 10 inches; loam
10 to 15 inches; loam
15 to 22 inches; clay
22 to 25 inches; gravelly clay
25 to 42 inches; cemented material
42 to 60 inches; cemented material

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part
Slope range: 5 to 10 percent
Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Land capability subclass (irrigated): 6s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; gravelly loam
5 to 14 inches; very gravelly clay loam
14 to 19 inches; extremely gravelly clay
19 to 29 inches; cemented material
29 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

626—Manastash-Selah-Durtash complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Manastash and similar soils: 40 percent

Selah and similar soils: 30 percent

Durtash and similar soils: 20 percent

Dissimilar minor components: 10 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 3e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay

25 to 42 inches; cemented material

42 to 60 inches; cemented material

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 15 to 30 percent

Soil Survey of Kittitas County Area, Washington

Depth to restrictive feature: 20 to 40 inches to an indurated duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Land capability subclass (irrigated): 6e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam
9 to 17 inches; silty clay loam
17 to 21 inches; cobbly clay loam
21 to 31 inches; cemented material
31 to 60 inches; cemented material

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part
Slope range: 15 to 30 percent
Depth to restrictive feature: 10 to 20 inches to strongly cemented duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Land capability subclass (irrigated): 6s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; gravelly loam
5 to 14 inches; very gravelly clay loam
14 to 19 inches; extremely gravelly clay
19 to 29 inches; cemented material
29 to 60 inches; cemented material

Dissimilar Minor Components

Reelaw soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

632—Manastash loam, 10 to 15 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 10 to 15 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 3e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay

25 to 42 inches; cemented material

42 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

633—Nack ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nack and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nack

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with a mantle of volcanic ash

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 15 to 39 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Land capability subclass (irrigated): 4w

Typical profile

0 to 6 inches; ashy loam

6 to 15 inches; clay loam

15 to 60 inches; extremely gravelly sandy clay

Dissimilar Minor Components

Nanum soils

Percentage of map unit: 10 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

634—Manastash-Durtash complex, 10 to 15 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 45 percent

Durtash and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 10 to 15 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay

25 to 42 inches; cemented material

42 to 60 inches; cemented material

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 10 to 15 percent

Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Land capability subclass (irrigated): 6s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; cobbly loam
5 to 14 inches; very gravelly clay loam
14 to 19 inches; extremely gravelly clay
19 to 29 inches; cemented material
29 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 10 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

635—Opnish ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,400 to 2,100 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Opnish and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Opnish

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Moderately well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Soil Survey of Kittitas County Area, Washington

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 24 to 40 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 3 millimhos per centimeters)

Sodicity (maximum): Sodium adsorption ratio about 7

Available water capacity (entire profile): High (about 11 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy loam

8 to 13 inches; ashy clay loam

13 to 26 inches; clay loam

26 to 60 inches; extremely gravelly clay loam

Dissimilar Minor Components

Nack soils

Percentage of map unit: 10 percent

Brickmill soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

637—TankseL-Lainand complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

TankseL and similar soils: 50 percent

Lainand and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of TankseL

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Soil Survey of Kittitas County Area, Washington

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam

17 to 20 inches; very gravelly clay loam

20 to 28 inches; extremely cobbly clay loam

28 to 38 inches; unweathered bedrock

Characteristics of Lainand

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium mixed with loess and volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 6 inches; ashy loam

6 to 12 inches; ashy loam

12 to 20 inches; cobbly ashy loam

20 to 41 inches; very cobbly clay loam

41 to 60 inches; very cobbly loam

Dissimilar Minor Components

Camaspatch soils

Percentage of map unit: 5 percent

Patron soils

Percentage of map unit: 5 percent

Shinn soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

638—Tanksel-Lainand-Camaspach complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Tanksel and similar soils: 35 percent

Lainand and similar soils: 25 percent

Camaspach and similar soils: 20 percent

Dissimilar minor components: 20 percent

Characteristics of Tanksel

Setting

Landform: Hillslopes, canyons

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam

17 to 20 inches; very gravelly clay loam

20 to 28 inches; extremely cobbly clay loam

28 to 38 inches; unweathered bedrock

Characteristics of Lainand

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium mixed with loess and volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 6 inches; ashy loam

6 to 12 inches; ashy loam

12 to 20 inches; cobbly ashy loam

20 to 41 inches; very cobbly clay loam

41 to 60 inches; very cobbly loam

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 30 to 70 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Wockum soils

Percentage of map unit: 10 percent

Patron soils

Percentage of map unit: 5 percent

Shinn soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

640—Elkheights loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 1,800 to 3,800 feet

Mean annual precipitation: 15 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 110 to 140 days

Map Unit Composition

Elkheights and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Elkheights

Setting

Landform: Hillslopes, moraines

Properties and qualities

Parent material: Alluvium and loess over basal till

Slope range: 5 to 10 percent

Depth to restrictive feature: 40 to 60 inches to dense material

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; loam

8 to 19 inches; loam

19 to 41 inches; loam

41 to 56 inches; gravelly loam

56 to 60 inches; very gravelly sandy clay loam

Dissimilar Minor Components

Swauk soils

Percentage of map unit: 10 percent

Qualla soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

644—Drino-Sohappy-Fortyday complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 500 to 2,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Drino and similar soils: 40 percent

Sohappy and similar soils: 30 percent

Fortyday and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Drino

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: COOL STONY 6-10 PZ (R007XY203WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 7 inches; very gravelly loam

7 to 19 inches; very gravelly loam

19 to 38 inches; extremely cobbly loam

38 to 48 inches; unweathered bedrock

Characteristics of Sohappy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and alluvium over basalt with loess in the upper part

Slope range: 15 to 30 percent

Soil Survey of Kittitas County Area, Washington

Depth to restrictive feature: 50 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Moderate (about 8.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 6-10 PZ (R007XY103WA)

Typical profile

0 to 4 inches; silt loam

4 to 32 inches; silt loam

32 to 43 inches; gravelly silt loam

43 to 51 inches; very cobbly loam

51 to 60 inches; unweathered bedrock

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; cobbly loam

3 to 6 inches; very gravelly loam

6 to 15 inches; extremely cobbly loam

15 to 25 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

650—Tankse-Patron-Camaspach complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Tankse and similar soils: 45 percent

Patron and similar soils: 30 percent

Camaspach and similar soils: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Tankse

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam

17 to 20 inches; very gravelly clay loam

20 to 28 inches; extremely cobbly clay loam

28 to 38 inches; unweathered bedrock

Characteristics of Patron

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 12 inches; gravelly ashy silt loam

12 to 35 inches; gravelly silty clay loam

35 to 60 inches; very gravelly clay loam

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

656—Tankseel-Patron-Camaspatch complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 3,300 feet

Soil Survey of Kittitas County Area, Washington

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Tanksel and similar soils: 45 percent

Patron and similar soils: 30 percent

Camaspatch and similar soils: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Tanksel

Setting

Landform: Hillslopes, canyons

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam

17 to 20 inches; very gravelly clay loam

20 to 28 inches; extremely cobbly clay loam

28 to 38 inches; unweathered bedrock

Characteristics of Patron

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 12 inches; gravelly ashy silt loam
12 to 35 inches; gravelly silty clay loam
35 to 60 inches; very gravelly clay loam

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt
Slope range: 30 to 70 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 9 inches; very gravelly clay loam
9 to 15 inches; extremely cobbly clay
15 to 25 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

658—Camaspatch-Tanksey complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 2,000 to 3,500 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 45 percent
Tanksey and similar soils: 40 percent
Dissimilar minor component: 15 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 30 to 70 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Characteristics of Tankse

Setting

Landform: Hillslopes, canyons

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam

17 to 20 inches; very gravelly clay loam

20 to 28 inches; extremely cobbly clay loam

28 to 38 inches; unweathered bedrock

Dissimilar Minor Components

Patron

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

661—Drysel loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 1,800 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Drysel and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Drysel

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 5 to 10 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Low (about 6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 11 inches; loam

11 to 27 inches; silt loam

27 to 31 inches; loam

31 to 41 inches; cemented material

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 10 percent

Drino soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

662—Ralock-Palerf complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Ralock and similar soils: 50 percent

Palerf and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Ralock

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt and alluvium with loess and volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Moderate (about 8.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; ashy silt loam

4 to 14 inches; ashy silt loam

14 to 27 inches; silt loam

27 to 36 inches; gravelly loam

36 to 60 inches; gravelly loam

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 25 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e
Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam
9 to 27 inches; very gravelly clay
27 to 35 inches; extremely gravelly clay
35 to 45 inches; unweathered bedrock

Dissimilar Minor Components

Horseflat soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

663—Ralock-Palerf complex, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,000 to 3,000 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 170 days

Map Unit Composition

Ralock and similar soils: 45 percent
Palerf and similar soils: 40 percent
Dissimilar minor components: 15 percent

Characteristics of Ralock

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt and alluvium with loess and volcanic ash in the upper part
Slope range: 30 to 45 percent

Soil Survey of Kittitas County Area, Washington

Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Moderate (about 8.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; ashy silt loam
4 to 14 inches; ashy silt loam
14 to 27 inches; silt loam
27 to 36 inches; gravelly loam
36 to 60 inches; gravelly loam

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part
Slope range: 30 to 45 percent
Depth to restrictive feature: 25 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam
9 to 27 inches; very gravelly clay
27 to 35 inches; extremely gravelly clay
35 to 45 inches; unweathered bedrock

Dissimilar Minor Components

Horseflat soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

667—Laufer-Thiessen complex, 30 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 4,000 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 100 to 145 days

Map Unit Composition

Laufer and similar soils: 40 percent

Thiessen and similar soils: 35 percent

Dissimilar minor components: 25 percent

Characteristics of Laufer

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and colluvium derived from basalt with loess in the upper part

Slope range: 30 to 45 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 16-24 PZ (R006XY201WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 7 inches; very gravelly clay loam

7 to 10 inches; very cobbly clay loam

10 to 15 inches; extremely cobbly clay loam

15 to 25 inches; unweathered bedrock

Characteristics of Thiessen

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 30 to 45 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 9 inches; very gravelly clay loam

9 to 22 inches; extremely gravelly clay loam

22 to 32 inches; unweathered bedrock

Dissimilar Minor Components

McDaniel soils

Percentage of map unit: 15 percent

Rock Creek soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

668—Laufer-Thiessen-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 1,700 to 3,900 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 100 to 145 days

Map Unit Composition

Laufer and similar soils: 40 percent

Thiessen and similar soils: 30 percent

Rubble land: 15 percent

Dissimilar minor components: 15 percent

Characteristics of Laufer

Setting

Landform: Hillslopes, walls of canyons

Properties and qualities

Parent material: Slope alluvium and colluvium derived from basalt with loess in the upper part

Slope range: 30 to 75 percent

Soil Survey of Kittitas County Area, Washington

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 16-24 PZ (R006XY201WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 7 inches; very gravelly clay loam

7 to 10 inches; very cobbly clay loam

10 to 15 inches; extremely cobbly clay loam

15 to 25 inches; unweathered bedrock

Characteristics of Thiessen

Setting

Landform: Walls of canyons

Properties and qualities

Parent material: Loess and colluvium derived from basalt

Slope range: 30 to 75 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 9 inches; very gravelly clay loam

9 to 22 inches; extremely gravelly clay loam

22 to 32 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Horseflat soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

669—Argabak-Zen-Grinrod complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Argabak and similar soils: 35 percent

Zen and similar soils: 30 percent

Grinrod and similar soils: 20 percent

Dissimilar minor components: 15 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 6 inches; extremely gravelly loam

6 to 16 inches; unweathered bedrock

Characteristics of Zen

Setting

Landform: Structural benches

Properties and qualities

Parent material: Loess and slope alluvium over basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 7 inches; silt loam

7 to 12 inches; silt loam

12 to 27 inches; clay loam

27 to 30 inches; gravelly clay loam

30 to 40 inches; unweathered bedrock

Characteristics of Grinrod

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 10 inches; very gravelly loam
10 to 27 inches; very gravelly loam
27 to 37 inches; unweathered bedrock

Dissimilar Minor Components

Benwy soils

Percentage of map unit: 5 percent

Horseflat soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

670—Argabak-Whiskeydick complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,100 to 3,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 160 days

Map Unit Composition

Argabak and similar soils: 45 percent

Whiskeydick and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam
2 to 6 inches; extremely gravelly loam
6 to 16 inches; unweathered bedrock

Characteristics of Whiskeydick

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Land capability subclass (irrigated): 4e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 10 inches; very cobbly clay loam
10 to 27 inches; very cobbly clay
27 to 37 inches; unweathered bedrock

Dissimilar Minor Components

Benwy soils

Percentage of map unit: 5 percent

Grinrod soils

Percentage of map unit: 5 percent

Horseflat soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

672—Argabak-Mozen complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 3,300 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 120 to 140 days

Map Unit Composition

Argabak and similar soils: 45 percent

Mozen and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 6 inches; extremely gravelly loam

6 to 16 inches; unweathered bedrock

Characteristics of Mozen

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and residuum derived from basalt with loess and volcanic ash in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 5 inches; ashy silt loam

5 to 13 inches; ashy silt loam

13 to 22 inches; clay loam

22 to 28 inches; loam

28 to 39 inches; loam

39 to 49 inches; unweathered bedrock

Dissimilar Minor Components

Benwy soils

Percentage of map unit: 5 percent

Grinrod soils

Percentage of map unit: 5 percent

Horseflat soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

674—Durtash gravelly loam, 3 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Durtash, gravelly, and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Durtash, Gravelly

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 3 to 10 percent

Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; gravelly loam
5 to 14 inches; very gravelly clay loam
14 to 19 inches; extremely gravelly clay
19 to 29 inches; cemented material
29 to 60 inches; cemented material

Dissimilar Minor Components

Selah soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

684—Nitzel-Weirman complex, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,200 to 3,100 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Nitzel and similar soils: 60 percent
Weirman and similar soils: 35 percent
Dissimilar minor component: 5 percent

Characteristics of Nitzel

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 2 to 5 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Moderately well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: Occasional (see Water Features table)
Frequency of ponding: None
Seasonal high water table (minimum depth): About 29 to 46 inches (see Water Features table)
Available water capacity (entire profile): High (about 10.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 3e

Typical profile

0 to 8 inches; ashy silt loam

8 to 29 inches; ashy loam

29 to 46 inches; loam

46 to 60 inches; sandy loam

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Typical profile

0 to 5 inches; gravelly sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Aquolls

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

693—Tanksel-Wockum complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,600 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Tanksel and similar soils: 45 percent

Wockum and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Tanksel

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam

17 to 20 inches; very gravelly clay loam

20 to 28 inches; extremely cobbly clay loam

28 to 38 inches; unweathered bedrock

Characteristics of Wockum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 9.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 17 inches; ashy silt loam
17 to 59 inches; silt loam
59 to 60 inches; very gravelly loam

Dissimilar Minor Components

Windry soils

Percentage of map unit: 10 percent

Camaspatch soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

695—Drino-Sohappy-Fortyday complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 3,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Drino and similar soils: 35 percent

Sohappy and similar soils: 30 percent

Fortyday and similar soils: 25 percent

Dissimilar minor components: 10 percent

Characteristics of Drino

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL STONY 6-10 PZ (R007XY203WA)

Typical profile

0 to 3 inches; very gravelly loam
3 to 7 inches; very gravelly loam

7 to 19 inches; very gravelly loam
19 to 38 inches; extremely cobbly loam
38 to 48 inches; unweathered bedrock

Characteristics of Sohappy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and alluvium over basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 50 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Moderate (about 8.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 6-10 PZ (R007XY102WA)

Typical profile

0 to 4 inches; silt loam
4 to 32 inches; silt loam
32 to 43 inches; gravelly silt loam
43 to 51 inches; very cobbly loam
51 to 60 inches; unweathered bedrock

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; cobbly loam
3 to 6 inches; very gravelly loam
6 to 15 inches; extremely cobbly loam
15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Disage soils

Percentage of map unit: 5 percent

Nevo soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

697—Wockum-Blint complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 3,300 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Wockum and similar soils: 50 percent

Blint and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Wockum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 9.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 17 inches; ashy silt loam

17 to 59 inches; silt loam

59 to 60 inches; very gravelly loam

Characteristics of Blint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Volcanic ash over colluvium derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; very cobbly ashy loam

4 to 10 inches; very gravelly ashy loam

10 to 18 inches; very gravelly loam

18 to 22 inches; extremely cobbly silt loam

22 to 32 inches; unweathered bedrock

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Windry soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

698—Wockum-Blint-Windry complex, 45 to 60 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,500 to 3,000 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Wockum and similar soils: 40 percent

Blint and similar soils: 30 percent

Windry and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Wockum

Setting

Landform: Hillslopes, canyons

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 45 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 9.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 17 inches; ashy silt loam

17 to 59 inches; silt loam

59 to 60 inches; very gravelly loam

Characteristics of Blint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Volcanic ash over colluvium derived from basalt

Slope range: 45 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; very cobbly ashy loam

4 to 10 inches; very gravelly ashy loam

10 to 18 inches; very gravelly loam

18 to 22 inches; extremely cobbly silt loam

22 to 32 inches; unweathered bedrock

Characteristics of Windry

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 45 to 60 percent

Soil Survey of Kittitas County Area, Washington

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 7 inches; very gravelly clay loam

7 to 15 inches; extremely cobbly clay loam

15 to 19 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

706—Kayak gravelly ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Kayak and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Kayak

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 17 to 29 inches (see Water Features table)

Available water capacity (entire profile): Low (about 6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; gravelly ashy loam

6 to 17 inches; ashy loam

17 to 29 inches; ashy fine sandy loam

29 to 39 inches; fine sandy loam

39 to 60 inches; extremely gravelly sand

Dissimilar Minor Components

Weirman soils

Percentage of map unit: 10 percent

Nitzel soils

Percentage of map unit: 5 percent

Major Use

Cropland

712—Malaga cobbly sandy loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau, 7—Columbia Basin

Elevation: 500 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Malaga and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Malaga

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash

Slope range: 3 to 15 percent

Depth to restrictive feature: 15 to 28 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 4s

Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 4 inches; cobbly sandy loam

4 to 9 inches; gravelly sandy loam

9 to 12 inches; very gravelly sandy loam

12 to 19 inches; extremely gravelly sandy loam

19 to 60 inches; extremely gravelly coarse sand

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 10 percent

Nevo soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

713—Malaga cobbly sandy loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau, 7—Columbia Basin

Elevation: 500 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Malaga and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Malaga

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash

Slope range: 15 to 30 percent

Depth to restrictive feature: 15 to 28 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 4 inches; cobbly sandy loam

4 to 9 inches; gravelly sandy loam

9 to 12 inches; very gravelly sandy loam

12 to 19 inches; extremely gravelly sandy loam

19 to 60 inches; extremely gravelly coarse sand

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 10 percent

Nevo soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

715—Weirman gravelly sandy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 2,800 feet

Mean annual precipitation: 7 to 14 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Weirman and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Typical profile

0 to 5 inches; gravelly sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Kayak soils

Percentage of map unit: 5 percent

Nitzel soils

Percentage of map unit: 5 percent

Nosal soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

717—Fortyday-Drino-Nevo complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Fortyday and similar soils: 40 percent

Drino and similar soils: 30 percent

Nevo and similar soils: 20 percent

Dissimilar minor components: 10 percent

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 6 inches; very gravelly loam

6 to 15 inches; extremely cobbly loam

15 to 25 inches; unweathered bedrock

Characteristics of Drino

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 7 inches; very gravelly loam

7 to 19 inches; very gravelly loam

19 to 38 inches; extremely cobbly loam

38 to 48 inches; unweathered bedrock

Characteristics of Nevo

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 5 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.8 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW DESERT PAVEMENT 6-10 PZ (R007XY302WA)

Typical profile

0 to 2 inches; extremely gravelly sandy loam
2 to 8 inches; very gravelly clay loam
8 to 18 inches; unweathered bedrock

Dissimilar Minor Components

Disage soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

718—Fortyday-Drino-Nevo complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Fortyday and similar soils: 40 percent

Drino and similar soils: 25 percent

Nevo and similar soils: 25 percent

Dissimilar minor components: 10 percent

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very stony loam
3 to 6 inches; very gravelly loam
6 to 15 inches; extremely cobbly loam
15 to 25 inches; unweathered bedrock

Characteristics of Drino

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess in the upper part
Slope range: 30 to 60 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very gravelly loam
3 to 7 inches; very gravelly loam
7 to 19 inches; very gravelly loam
19 to 38 inches; extremely cobbly loam
38 to 48 inches; unweathered bedrock

Characteristics of Nevo

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt
Slope range: 30 to 60 percent
Depth to restrictive feature: 5 to 10 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: VERY SHALLOW 6-10 PZ (R007XY301WA)

Typical profile

0 to 2 inches; very cobbly loam
2 to 8 inches; very gravelly clay loam
8 to 18 inches; unweathered bedrock

Dissimilar Minor Components

Disage soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

720—Nanum ashy sandy clay loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nanum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nanum

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 21 to 28 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 7.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; ashy sandy clay loam

6 to 15 inches; ashy loam

15 to 28 inches; ashy clay loam

28 to 35 inches; very gravelly clay loam

35 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Brickmill soils

Percentage of map unit: 5 percent

Nack soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

724—Manastash-Durtash complex, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 55 percent

Durtash and similar soils: 30 percent

Dissimilar minor components: 15 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay
25 to 42 inches; cemented material
42 to 60 inches; cemented material

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; gravelly loam
5 to 14 inches; very gravelly clay loam
14 to 19 inches; extremely gravelly clay
19 to 29 inches; cemented material
29 to 60 inches; cemented material

Dissimilar Minor Components

Benwy soils

Percentage of map unit: 5 percent

Meloza soils

Percentage of map unit: 5 percent

Selah soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

725—Argabak-Vantage complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,300 to 3,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Argabak and similar soils: 55 percent
Vantage and similar soils: 40 percent
Dissimilar minor component: 5 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt
Slope range: 3 to 15 percent
Depth to restrictive feature: 5 to 12 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam
2 to 6 inches; extremely gravelly loam
6 to 16 inches; unweathered bedrock

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part
Slope range: 3 to 15 percent
Depth to restrictive feature: 11 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam
5 to 8 inches; very cobbly clay loam
8 to 18 inches; very cobbly clay
18 to 28 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

741—Vantage complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 50 percent

Vantage, thin surface, and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very stony loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 26 inches; unweathered bedrock

Characteristics of Vantage, Thin Surface

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 3 inches; very stony loam

3 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Dissimilar Minor Components

Clerf soils

Percentage of map unit: 5 percent

Selah soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

742—Drino-Fortyday complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 900 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Drino and similar soils: 45 percent

Fortyday and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Drino

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Soil Survey of Kittitas County Area, Washington

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very gravelly loam
3 to 7 inches; very gravelly loam
7 to 19 inches; very gravelly loam
19 to 38 inches; extremely cobbly loam
38 to 48 inches; unweathered bedrock

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part
Slope range: 15 to 30 percent
Depth to restrictive feature: 14 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; cobbly loam
3 to 6 inches; very gravelly loam
6 to 15 inches; extremely cobbly loam
15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Kiona soils

Percentage of map unit: 5 percent

Nevo soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Sohappy soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

744—Palerf-Vantage complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 800 to 2,900 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Palerf and similar soils: 50 percent

Vantage and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 25 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 27 inches; very gravelly clay

27 to 35 inches; extremely gravelly clay

35 to 45 inches; unweathered bedrock

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Soil Survey of Kittitas County Area, Washington

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam
5 to 8 inches; very cobbly clay loam
8 to 18 inches; very cobbly clay
18 to 28 inches; unweathered bedrock

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Rubble land

Percentage of map unit: 5 percent

Major Use

Livestock grazing

745—Zen-Benwy-Laric complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,800 to 2,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Zen and similar soils: 40 percent
Benwy and similar soils: 30 percent
Laric and similar soils: 25 percent
Dissimilar minor component: 5 percent

Characteristics of Zen

Setting

Landform: Structural benches

Properties and qualities

Parent material: Loess and slope alluvium over basalt
Slope range: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Land capability subclass (irrigated): 4e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 7 inches; silt loam
7 to 12 inches; silt loam
12 to 27 inches; clay loam
27 to 30 inches; gravelly clay loam
30 to 40 inches; unweathered bedrock

Characteristics of Benwy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Loess, alluvium, and colluvium over a duripan
Slope range: 3 to 15 percent
Depth to restrictive feature: 40 to 60 inches to an indurated duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 3
Available water capacity (entire profile): Moderate (about 8.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 10 inches; silt loam
10 to 18 inches; silt loam
18 to 33 inches; gravelly silt loam
33 to 45 inches; gravelly silt loam
45 to 55 inches; cemented material

Characteristics of Laric

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt
Slope range: 3 to 15 percent
Depth to restrictive feature: 5 to 12 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: VERY SHALLOW 6-10 PZ (R007XY301WA)

Typical profile

0 to 3 inches; very gravelly loam
3 to 9 inches; gravelly clay loam
9 to 19 inches; unweathered bedrock

Dissimilar Minor Component

Horseflat soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

747—Palerf-Ralock-Vantage complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,300 to 2,900 feet
Mean annual precipitation: 9 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 170 days

Map Unit Composition

Palerf and similar soils: 40 percent
Ralock and similar soils: 30 percent
Vantage and similar soils: 25 percent
Dissimilar minor component: 5 percent

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part
Slope range: 15 to 30 percent
Depth to restrictive feature: 25 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 27 inches; very gravelly clay

27 to 35 inches; extremely gravelly clay

35 to 45 inches; unweathered bedrock

Characteristics of Ralock

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt and alluvium with loess and volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Moderate (about 8.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; ashy silt loam

4 to 14 inches; ashy silt loam

14 to 27 inches; silt loam

27 to 36 inches; gravelly loam

36 to 60 inches; gravelly loam

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam
5 to 8 inches; very cobbly clay loam
8 to 18 inches; very cobbly clay
18 to 28 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

748—Malaga gravelly sandy loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Elevation: 800 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Malaga and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Malaga

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash

Slope range: 2 to 5 percent

Depth to restrictive feature: 15 to 28 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 4s

Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 4 inches; gravelly sandy loam
4 to 9 inches; gravelly sandy loam
9 to 12 inches; very gravelly sandy loam

12 to 19 inches; extremely gravelly sandy loam

19 to 60 inches; extremely gravelly coarse sand

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 10 percent

Nevo soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

751—Vantage-Clerf-Rubble land complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 3,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 40 percent

Clerf and similar soils: 25 percent

Rubble land: 20 percent

Dissimilar minor components: 15 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay
18 to 28 inches; unweathered bedrock

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Caliralls soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Wipple soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

755—Nevo-Fortyday complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 800 to 2,200 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Nevo and similar soils: 45 percent

Fortyday and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Nevo

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 6-10 PZ (R007XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 8 inches; very gravelly clay loam

8 to 18 inches; unweathered bedrock

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very cobbly loam

3 to 6 inches; very gravelly loam

6 to 15 inches; extremely cobbly loam

15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Drino soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

758—Sohappy-Fortyday complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,200 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Sohappy and similar soils: 50 percent

Fortyday and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Sohappy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and alluvium over basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 50 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Moderate (about 8.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 6-10 PZ (R007XY102WA)

Typical profile

0 to 4 inches; silt loam
4 to 32 inches; silt loam
32 to 43 inches; gravelly silt loam
43 to 51 inches; very cobbly loam
51 to 60 inches; unweathered bedrock

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; cobbly loam
3 to 6 inches; very gravelly loam
6 to 15 inches; extremely cobbly loam
15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Disage soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

772—Haploxerolls-Weirman-Aquolls complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Elevation: 500 to 2,500 feet

Mean annual precipitation: 7 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Haploxerolls and similar soils: 65 percent

Weirman and similar soils: 15 percent

Aquolls and similar soils: 15 percent

Dissimilar minor component: 5 percent

Characteristics of Haploxerolls

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): High (about 11.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: ALKALI BOTTOM 6-10 PZ (R007XY401WA)

Typical profile

0 to 17 inches; silt loam

17 to 60 inches; fine sandy loam

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Frequent (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Typical profile

0 to 5 inches; very cobbly sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Characteristics of Aquolls

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification

Drainage class: Poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Frequent (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): At the soil surface to a depth of 5 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 5w

Ecological site: WET ALKALI MEADOW 6-10 PZ (R007XY603WA)

Typical profile

0 to 5 inches; cobbly fine sandy loam

5 to 12 inches; gravelly sandy loam

12 to 18 inches; extremely gravelly sandy loam

18 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Kayak soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

774—Drino-Rubble land-Rock outcrop complex, 30 to 75 percent north slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 500 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Drino and similar soils: 35 percent

Rubble land: 35 percent

Rock outcrop: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Drino

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess in the upper part

Slope range: 30 to 75 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL STONY 6-10 PZ (R007XY203WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 7 inches; very gravelly loam

7 to 19 inches; very gravelly loam

19 to 38 inches; extremely cobbly loam

38 to 48 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Rock outcrop

Properties and qualities

Slope range: 30 to 75 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Fortyday soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

787—Terlan-Durtash-Selah complex, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 2,600 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Terlan and similar soils: 40 percent

Durtash and similar soils: 30 percent

Selah and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Terlan

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Loess over alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; gravelly loam

7 to 15 inches; gravelly clay loam

15 to 18 inches; very gravelly loam

18 to 26 inches; cemented material

26 to 60 inches; cemented material

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; gravelly loam

5 to 14 inches; very gravelly clay loam

14 to 19 inches; extremely gravelly clay

19 to 29 inches; cemented material

29 to 60 inches; cemented material

Characteristics of Selah

Setting

Landform: Dissected terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; loam

9 to 17 inches; silty clay loam

17 to 21 inches; cobbly clay loam

21 to 31 inches; cemented material

31 to 60 inches; cemented material

Dissimilar Minor Component

Benwy soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

789—Deedale clay loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Deedale and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Deedale

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 12 to 19 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 9.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Land capability subclass (irrigated): 4w

Typical profile

0 to 12 inches; clay loam

12 to 25 inches; clay

25 to 31 inches; clay

31 to 54 inches; clay

54 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Mitta soils

Percentage of map unit: 10 percent

Nack soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

790—Mitta ashy silt loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Mitta and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Mitta

Setting

Landform: Flood plains, fan aprons, fan skirts, inset fans

Properties and qualities

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 34 to 49 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 6

Available water capacity (entire profile): High (about 11.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2w

Land capability subclass (irrigated): 2w

Typical profile

0 to 6 inches; ashy silt loam

6 to 15 inches; ashy silt loam

15 to 34 inches; ashy silt loam

34 to 49 inches; silty clay loam

49 to 60 inches; silty clay loam

Dissimilar Minor Components

Deedale soils

Percentage of map unit: 10 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

791—Mitta ashy silt loam, drained, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Mitta, drained, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Mitta, Drained

Setting

Landform: Flood plains, fan aprons, fan skirts, inset fans

Properties and qualities

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 34 to 49 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 6

Available water capacity (entire profile): High (about 11.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2w

Land capability subclass (irrigated): 2w

Typical profile

0 to 6 inches; ashy silt loam

6 to 15 inches; ashy silt loam

15 to 34 inches; ashy silt loam

34 to 49 inches; silty clay loam

49 to 60 inches; silty clay loam

Dissimilar Minor Components

Deedale soils

Percentage of map unit: 10 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

792—Brickmill gravelly ashy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brickmill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brickmill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 38 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 12 inches; gravelly ashy loam

12 to 28 inches; very gravelly ashy sandy loam

28 to 38 inches; extremely gravelly sandy loam

38 to 49 inches; extremely gravelly sandy loam

49 to 60 inches; extremely gravelly loamy coarse sand

Dissimilar Minor Components

Nanum soils

Percentage of map unit: 10 percent

Ackna soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

793—Zillah-Kayak complex, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 1,800 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Zillah and similar soils: 55 percent

Kayak and similar soils: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Zillah

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 5 to 7 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Ecological site: LOAMY BOTTOM 19-16 PZ (R008XY402WA)

Typical profile

0 to 7 inches; silt loam

7 to 15 inches; silt loam

15 to 32 inches; silt loam

32 to 51 inches; very fine sandy loam

51 to 60 inches; very gravelly loamy sand

Characteristics of Kayak

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 17 to 29 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; ashy loam

6 to 17 inches; ashy loam

17 to 29 inches; ashy fine sandy loam

29 to 39 inches; fine sandy loam

39 to 60 inches; extremely gravelly sand

Dissimilar Minor Component

Weirman soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

794—Kayak-Weirman complex, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Kayak and similar soils: 60 percent

Weirman and similar soils: 35 percent

Dissimilar minor component: 5 percent

Characteristics of Kayak

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 17 to 29 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; ashy loam

6 to 17 inches; ashy loam

17 to 29 inches; ashy fine sandy loam

29 to 39 inches; fine sandy loam

39 to 60 inches; extremely gravelly sand

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Typical profile

0 to 9 inches; gravelly sandy loam

9 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Zillah soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

795—Nack-Opnish complex, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nack and similar soils: 55 percent
Opnish and similar soils: 40 percent
Dissimilar minor component: 5 percent

Characteristics of Nack

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with a mantle of volcanic ash
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 15 to 39 inches (see Water Features table)
Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 3
Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w
Land capability subclass (irrigated): 4w

Typical profile

0 to 6 inches; gravelly ashy loam
6 to 15 inches; clay loam
15 to 60 inches; extremely gravelly sandy clay

Characteristics of Opnish

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Moderately well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 24 to 40 inches (see Water Features table)
Salinity (maximum): Very slightly saline (about 3 millimhos per centimeters)
Sodicity (maximum): Sodium adsorption ratio about 7
Available water capacity (entire profile): High (about 11 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w
Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy loam
8 to 13 inches; ashy clay loam
13 to 26 inches; clay loam
26 to 60 inches; extremely gravelly clay loam

Dissimilar Minor Component

Brickmill soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

796—Brickmill-Nack complex, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,400 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Brickmill and similar soils: 55 percent
Nack and similar soils: 35 percent
Dissimilar minor component: 10 percent

Characteristics of Brickmill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part
Slope range: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification
Drainage class: Somewhat poorly drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): About 28 to 38 inches (see Water Features table)
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w
Land capability subclass (irrigated): 3w

Typical profile

0 to 12 inches; gravelly ashy loam
12 to 28 inches; very gravelly ashy sandy loam
28 to 38 inches; extremely gravelly sandy loam

38 to 49 inches; extremely gravelly sandy loam
49 to 60 inches; extremely gravelly loamy coarse sand

Characteristics of Nack

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with a mantle of volcanic ash

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 15 to 39 inches (see Water Features table)

Salinity (maximum): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): Low (about 4.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Land capability subclass (irrigated): 4w

Typical profile

0 to 6 inches; gravelly ashy loam

6 to 15 inches; clay loam

15 to 60 inches; extremely gravelly sandy clay

Dissimilar Minor Component

Opnish soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

797—Brysill ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 1,800 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brysill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brysill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2s

Land capability subclass (irrigated): 2s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; ashy loam

9 to 15 inches; very gravelly ashy loam

15 to 25 inches; very gravelly sandy clay loam

25 to 48 inches; extremely gravelly sandy loam

48 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Nosal soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

799—Brysill gravelly ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brysill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brysill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

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Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2s

Land capability subclass (irrigated): 2s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 15 inches; very gravelly ashy loam

15 to 25 inches; very gravelly sandy clay loam

25 to 48 inches; extremely gravelly sandy loam

48 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Nosal soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

800—Brysill gravelly ashy loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 1,800 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brysill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brysill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 3e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 15 inches; very gravelly ashy loam

15 to 25 inches; very gravelly sandy clay loam

25 to 48 inches; extremely gravelly sandy loam

48 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Nosal soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

801—Brysill cobbly ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brysill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brysill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; cobbly ashy loam

9 to 15 inches; very gravelly ashy loam

15 to 25 inches; very gravelly sandy clay loam

25 to 48 inches; extremely gravelly sandy loam

48 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Nosal soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

802—Brysill cobbly ashy loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brysill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brysill

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; cobbly ashy loam

9 to 15 inches; very gravelly ashy loam

15 to 25 inches; very gravelly sandy clay loam

25 to 48 inches; extremely gravelly sandy loam

48 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Nosal soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

803—Brysill very cobbly ashy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brysill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Brysill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; very cobbly ashy loam
9 to 15 inches; very gravelly ashy loam
15 to 25 inches; very gravelly sandy clay loam
25 to 48 inches; extremely gravelly sandy loam
48 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Nosal soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

804—Benwy silt loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Benwy and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Benwy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Loess, alluvium, and colluvium over a duripan

Slope range: 2 to 5 percent

Depth to restrictive feature: 40 to 60 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 3

Available water capacity (entire profile): Moderate (about 8.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2e

Land capability subclass (irrigated): 2e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 10 inches; silt loam
10 to 18 inches; silt loam

18 to 33 inches; gravelly silt loam
33 to 45 inches; gravelly silt loam
45 to 55 inches; cemented material

Dissimilar Minor Components

Selah soils

Percentage of map unit: 5 percent

Terlan soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

806—Weirman complex, channeled, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,900 feet

Mean annual precipitation: 7 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Weirman, very gravelly sandy loam, and similar soils: 55 percent

Weirman, very cobbly sandy loam, and similar soils: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Weirman, Very Gravelly Sandy Loam

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Typical profile

0 to 5 inches; very gravelly sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Characteristics of Weirman, Very Cobbly Sandy Loam

Setting

Landform: Channels in flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Frequent (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Typical profile

0 to 4 inches; very cobbly sandy loam

4 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Kayak soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

807—Brysill-Ackna complex, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Brysill and similar soils: 60 percent

Ackna and similar soils: 30 percent

Dissimilar minor component: 10 percent

Characteristics of Brysill

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

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Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 4.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 9 inches; cobbly ashy loam

9 to 15 inches; very gravelly ashy loam

15 to 25 inches; very gravelly sandy clay loam

25 to 48 inches; extremely gravelly sandy loam

48 to 60 inches; extremely gravelly loamy sand

Characteristics of Ackna

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium and loess with volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Land capability subclass (irrigated): 2c

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 28 inches; loam

28 to 42 inches; extremely gravelly sandy clay loam

42 to 55 inches; extremely gravelly sandy loam

55 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Nanum soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

809—Weirman-Kayak-Zillah complex, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,100 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 130 to 180 days

Map Unit Composition

Weirman and similar soils: 40 percent

Kayak and similar soils: 30 percent

Zillah and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Typical profile

0 to 5 inches; very gravelly sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Characteristics of Kayak

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 17 to 29 inches (see Water Features table)

Available water capacity (entire profile): Low (about 5.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; ashy sandy loam

6 to 17 inches; ashy loam

17 to 29 inches; ashy fine sandy loam

29 to 39 inches; fine sandy loam

39 to 60 inches; extremely gravelly sand

Characteristics of Zillah

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 5 to 7 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Ecological site: LOAMY BOTTOM 19-16 PZ (R008XY402WA)

Typical profile

0 to 7 inches; silt loam

7 to 15 inches; silt loam

15 to 32 inches; silt loam

32 to 51 inches; very fine sandy loam

51 to 60 inches; very gravelly loamy sand

Dissimilar Minor Component

Nosal soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

814—Argixerolls, moist, 30 to 70 percent north slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Argixerolls, moist, north slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Argixerolls, Moist, North Slopes

Setting

Landform: Terrace escarpments, hillslopes

Properties and qualities

Parent material: Alluvium and/or loess

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 4 inches; ashy loam

4 to 12 inches; gravelly clay loam

12 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Lablue soils

Percentage of map unit: 5 percent

Reelow soils

Percentage of map unit: 5 percent

Sketter soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

815—Argixerolls, moist, 30 to 70 percent south slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Argixerolls, moist, south slopes, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Argixerolls, Moist, South Slopes

Setting

Landform: Terrace escarpments, hillslopes

Properties and qualities

Parent material: Alluvium and/or loess

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; cobbly loam

6 to 12 inches; gravelly clay loam

12 to 22 inches; gravelly clay loam

22 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Lablue soils

Percentage of map unit: 5 percent

Reelow soils

Percentage of map unit: 5 percent

Sketter soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

816—Patron complex, landslide, 5 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 3,300 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Patron, cobbly ashy silt loam, and similar soils: 45 percent

Patron and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Patron, Cobbly Ashy Silt Loam

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 12 inches; cobbly ashy silt loam

12 to 35 inches; gravelly silty clay loam

35 to 60 inches; very gravelly clay loam

Characteristics of Patron

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 12 inches; gravelly ashy silt loam

12 to 35 inches; gravelly silty clay loam

35 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Laufer soils

Percentage of map unit: 10 percent

Thiessen soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

817—Manastash loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 170 days

Map Unit Composition

Manastash and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Manastash

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Loess and alluvium

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to an indurated duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 5 inches; loam

5 to 10 inches; loam

10 to 15 inches; loam

15 to 22 inches; clay

22 to 25 inches; gravelly clay

25 to 42 inches; cemented material

42 to 60 inches; cemented material

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 10 percent

Reeser soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

818—Umtanum ashy silt loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Umtanum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Umtanum

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 48 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Land capability subclass (irrigated): 2c

Typical profile

0 to 9 inches; ashy silt loam

9 to 16 inches; silty clay loam

16 to 42 inches; silty clay loam

42 to 60 inches; silty clay loam

Dissimilar Minor Components

Mitta soils

Percentage of map unit: 5 percent

Pachneum soils

Percentage of map unit: 5 percent

Vanderbilt soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

819—Millhouse cobbly ashy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 2,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Millhouse and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Millhouse

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with loess and volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; cobbly ashy loam

4 to 14 inches; very gravelly ashy loam

14 to 28 inches; extremely gravelly sandy clay loam

28 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Nanum soils

Percentage of map unit: 5 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

820—Modsel complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Modsel, ashy loam, and similar soils: 50 percent

Modsel, cobbly ashy loam, and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Modsel, Ashy Loam

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 37 to 56 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2e

Land capability subclass (irrigated): 2e

Typical profile

0 to 7 inches; ashy loam

7 to 10 inches; clay loam

10 to 16 inches; gravelly clay loam

16 to 20 inches; very gravelly clay

20 to 60 inches; extremely gravelly sandy clay loam

Characteristics of Modsel, Cobbly Ashy Loam

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 37 to 56 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Typical profile

0 to 7 inches; cobbly ashy loam

7 to 10 inches; clay loam

10 to 16 inches; gravelly clay loam

16 to 20 inches; very gravelly clay

20 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Metser soils

Percentage of map unit: 10 percent

Millhouse soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

822—Reeser-Reelow-Sketter complex, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Reeser and similar soils: 35 percent

Reelow and similar soils: 30 percent

Sketter and similar soils: 30 percent

Dissimilar minor component: 5 percent

Characteristics of Reeser

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; ashy clay loam

6 to 13 inches; ashy clay loam

13 to 22 inches; clay

22 to 26 inches; cemented material

26 to 58 inches; cemented material

58 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Reelow

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; ashy clay loam

2 to 6 inches; ashy clay loam

6 to 14 inches; gravelly clay

14 to 18 inches; cemented material

18 to 56 inches; cemented material

56 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Sketter

Setting

Landform: Terraces, fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift over a duripan with an influence of loess mixed with volcanic ash in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; cobbly ashy loam

6 to 10 inches; gravelly ashy loam

10 to 21 inches; extremely cobbly sandy clay

21 to 24 inches; cemented material

24 to 55 inches; cemented material

55 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Component

Lablue soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

823—Millhouse cobbly ashy loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 2,400 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Millhouse and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Millhouse

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with loess and volcanic ash in the upper part

Slope range: 5 to 10 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; cobbly ashy loam

4 to 14 inches; very gravelly ashy loam

14 to 28 inches; extremely gravelly sandy clay loam

28 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Reelow soils

Percentage of map unit: 5 percent

Reeser soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

824—*Pachneum* ashy loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, piedmont slopes

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 3,000 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Pachneum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Pachneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 5 to 10 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; ashy loam
8 to 18 inches; ashy loam
18 to 26 inches; clay loam
26 to 33 inches; clay loam
33 to 47 inches; clay loam
47 to 60 inches; clay loam

Dissimilar Minor Components

Nint soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

825—*Pachneum* ashy loam, 10 to 15 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, valleys

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains,
Eastern Slope

Elevation: 1,500 to 3,200 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Pachneum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Pachneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 10 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; ashy loam
8 to 18 inches; ashy loam

18 to 26 inches; clay loam
26 to 33 inches; clay loam
33 to 47 inches; clay loam
47 to 60 inches; clay loam

Dissimilar Minor Components

Nint soils

Percentage of map unit: 10 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

828—Swauk loam, 5 to 15 percent slopes

Map Unit Setting

General landscape: Till plains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern
Slope

Elevation: 2,100 to 2,600 feet

Mean annual precipitation: 17 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Swauk and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Swauk

Setting

Landform: Moraines

Properties and qualities

Parent material: Loess over glacial till

Slope range: 5 to 15 percent

Depth to restrictive feature: 29 to 40 inches to dense material

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 5 inches; loam

5 to 18 inches; clay loam

18 to 31 inches; clay

31 to 60 inches; gravelly clay loam

Dissimilar Minor Components

Qualla soils

Percentage of map unit: 10 percent

Elkheights soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

829—Swauk loam, 15 to 30 percent slopes

Map Unit Setting

General landscape: Dissected till plains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 2,600 feet

Mean annual precipitation: 17 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Swauk and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Swauk

Setting

Landform: Moraines

Properties and qualities

Parent material: Loess over glacial till

Slope range: 15 to 30 percent

Depth to restrictive feature: 29 to 40 inches to dense material

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 5 inches; loam

5 to 18 inches; clay loam

18 to 31 inches; clay

31 to 60 inches; gravelly clay loam

Dissimilar Minor Components

Qualla soils

Percentage of map unit: 10 percent

Elkheights soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

830—Swauk-Qualla complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Dissected till plains

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,600 to 2,500 feet

Mean annual precipitation: 17 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Swauk and similar soils: 60 percent

Qualla and similar soils: 40 percent

Characteristics of Swauk

Setting

Landform: Moraines

Properties and qualities

Parent material: Loess over glacial till

Slope range: 5 to 15 percent

Depth to restrictive feature: 29 to 40 inches to dense material

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 5 inches; loam

5 to 18 inches; clay loam

18 to 31 inches; clay

31 to 60 inches; gravelly clay loam

Characteristics of Qualla

Setting

Landform: Moraines

Properties and qualities

Parent material: Glacial till with loess in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 34 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 7 inches; loam

7 to 28 inches; silt loam

28 to 38 inches; silt loam

38 to 42 inches; clay loam

42 to 60 inches; clay loam

Major Uses

Cropland, livestock grazing

831—Qualla loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Till plains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 2,400 feet

Mean annual precipitation: 17 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Qualla and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Qualla

Setting

Landform: Moraines

Properties and qualities

Parent material: Glacial till with loess in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 34 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 7 inches; loam

7 to 28 inches; silt loam

28 to 38 inches; silt loam

38 to 42 inches; clay loam

42 to 60 inches; clay loam

Dissimilar Minor Component

Swauk soils

Percentage of map unit: 10 percent

Major Uses

Cropland, livestock grazing

832—*Qualla loam, 5 to 15 percent slopes*

Map Unit Setting

General landscape: Dissected till plains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 2,400 feet

Mean annual precipitation: 17 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Qualla and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Qualla

Setting

Landform: Moraines

Properties and qualities

Parent material: Glacial till with loess in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 34 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 7 inches; loam

7 to 28 inches; silt loam

28 to 38 inches; silt loam

38 to 42 inches; clay loam

42 to 60 inches; clay loam

Dissimilar Minor Component

Swauk soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

833—Swauk loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Till plains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 2,100 to 3,400 feet

Mean annual precipitation: 17 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Swauk and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Swauk

Setting

Landform: Moraines

Properties and qualities

Parent material: Loess over glacial till

Slope range: 0 to 5 percent

Depth to restrictive feature: 29 to 40 inches to dense material

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 5 inches; loam

5 to 18 inches; clay loam

18 to 31 inches; clay

31 to 60 inches; gravelly clay loam

Dissimilar Minor Component

Qualla soils

Percentage of map unit: 10 percent

Major Uses

Cropland, livestock grazing

835—Swauk-Qualla complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Dissected till plains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

8—Columbia Plateau

Soil Survey of Kittitas County Area, Washington

Elevation: 1,500 to 2,600 feet

Mean annual precipitation: 17 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Swauk and similar soils: 60 percent

Qualla and similar soils: 40 percent

Characteristics of Swauk

Setting

Landform: Moraines

Properties and qualities

Parent material: Loess over glacial till

Slope range: 15 to 30 percent

Depth to restrictive feature: 29 to 40 inches to dense material

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 5 inches; loam

5 to 18 inches; clay loam

18 to 31 inches; clay

31 to 60 inches; gravelly clay loam

Characteristics of Qualla

Setting

Landform: Moraines

Properties and qualities

Parent material: Glacial till with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 34 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 7 inches; loam

7 to 28 inches; silt loam

28 to 38 inches; silt loam
38 to 42 inches; clay loam
42 to 60 inches; clay loam

Major Uses

Cropland, livestock grazing

838—Nosal ashy silt loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nosal and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Nosal

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 19 to 26 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 15 inches; ashy silt loam

15 to 26 inches; clay loam

26 to 32 inches; clay loam

32 to 44 inches; sandy clay loam

44 to 60 inches; very gravelly sandy clay loam

Dissimilar Minor Component

Nack soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

839—Vanderbilt ashy loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Vanderbilt and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Vanderbilt

Setting

Landform: Outwash terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Land capability subclass (irrigated): 2c

Ecological site: LOAMY BOTTOM 19-16 PZ (R008XY402WA)

Typical profile

0 to 8 inches; ashy loam

8 to 28 inches; ashy loam

28 to 38 inches; clay loam

38 to 60 inches; clay loam

Dissimilar Minor Components

Mitta soils

Percentage of map unit: 5 percent

Nosal soils

Percentage of map unit: 5 percent

Umtanum soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

841—Metser clay loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Metser and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Metser

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 30 to 37 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 7.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 3w

Typical profile

0 to 9 inches; clay loam

9 to 15 inches; clay

15 to 30 inches; clay

30 to 37 inches; very gravelly sandy clay

37 to 60 inches; extremely gravelly sandy clay

Dissimilar Minor Components

Vanderbilt soils

Percentage of map unit: 10 percent

Ackna soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

842—Durtash cobbly loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Durtash and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; cobbly loam

5 to 14 inches; very gravelly clay loam

14 to 19 inches; extremely gravelly clay

19 to 29 inches; cemented material

29 to 60 inches; cemented material

Dissimilar Minor Components

Horseflat soils

Percentage of map unit: 5 percent

Manastash soils

Percentage of map unit: 5 percent

Selah soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

843—Reelow-Reeser-Sketter complex, 2 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,600 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Reelow and similar soils: 40 percent

Reeser and similar soils: 30 percent

Sketter and similar soils: 20 percent

Dissimilar minor component: 10 percent

Characteristics of Reelow

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 2 to 10 percent

Depth to restrictive feature: 10 to 20 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; gravelly ashy clay loam

2 to 6 inches; ashy clay loam

6 to 14 inches; gravelly clay

14 to 18 inches; cemented material

18 to 56 inches; cemented material

56 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Reeser

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 2 to 10 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e
Land capability subclass (irrigated): 4e
Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; ashy clay loam
6 to 13 inches; ashy clay loam
13 to 22 inches; clay
22 to 26 inches; cemented material
26 to 58 inches; cemented material
58 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Sketter

Setting

Landform: Terraces, fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift over a duripan with an influence of loess mixed with volcanic ash in the upper part
Slope range: 2 to 10 percent
Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s
Land capability subclass (irrigated): 4e
Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; cobbly ashy loam
6 to 10 inches; gravelly ashy loam
10 to 21 inches; extremely cobbly sandy clay
21 to 24 inches; cemented material
24 to 55 inches; cemented material
55 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Component

Lablue soils

Percentage of map unit: 10 percent

Major Uses

Cropland, livestock grazing

844—Metmill very gravelly ashy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Metmill, very gravelly ashy loam, and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Metmill, Very Gravelly Ashy Loam

Setting

Landform: Inset fans, alluvial fans

Properties and qualities

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 22 to 34 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 4w

Typical profile

0 to 6 inches; very gravelly ashy loam

6 to 14 inches; ashy loam

14 to 22 inches; very gravelly clay loam

22 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Maxhill soils

Percentage of map unit: 5 percent

Modsel soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

850—Reelow ashy clay loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Reelow and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Reelow

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; ashy clay loam

2 to 6 inches; ashy clay loam

6 to 14 inches; gravelly clay

14 to 18 inches; cemented material

18 to 56 inches; cemented material

56 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Components

Reeser soils

Percentage of map unit: 10 percent

Selah soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

852—Durtash loam, 2 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Durtash and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Durtash

Setting

Landform: Alluvial fans

Properties and qualities

Parent material: Alluvium with loess in the upper part

Slope range: 2 to 5 percent

Depth to restrictive feature: 10 to 20 inches to a strongly cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; loam

7 to 14 inches; very gravelly clay loam

14 to 19 inches; extremely gravelly clay

19 to 29 inches; cemented material

29 to 60 inches; cemented material

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 10 percent

Manastash soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

853—Nint-McDaniel-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 3,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 110 to 135 days

Map Unit Composition

Nint and similar soils: 40 percent

McDaniel and similar soils: 35 percent

Rubble land: 20 percent

Dissimilar minor components: 5 percent

Characteristics of Nint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and some residuum derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 30 to 75 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 13 inches; very gravelly clay loam

13 to 19 inches; very gravelly clay loam

19 to 38 inches; very gravelly clay loam

38 to 48 inches; unweathered bedrock

Characteristics of McDaniel

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 30 to 65 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 14 inches; gravelly ashy loam

14 to 19 inches; gravelly ashy loam

19 to 24 inches; very cobbly clay loam

24 to 32 inches; very cobbly clay loam

32 to 60 inches; extremely cobbly clay loam

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Shinn soils

Percentage of map unit: 3 percent

Camaspatch soils

Percentage of map unit: 2 percent

Major Use

Livestock grazing

854—Shinn-Rubble land-Shushuskin complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,000 to 3,000 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Shinn and similar soils: 40 percent

Rubble land: 30 percent

Shushuskin and similar soils: 20 percent

Dissimilar minor components: 10 percent

Characteristics of Shinn

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess and a small amount of volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 6 inches; extremely cobbly clay loam

6 to 9 inches; extremely cobbly clay loam

9 to 18 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Shushuskin

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and some residuum derived from basalt with loess and an influence of volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e
Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 4 inches; ashy loam
4 to 8 inches; ashy loam
8 to 13 inches; ashy loam
13 to 19 inches; loam
19 to 23 inches; clay loam
23 to 32 inches; very gravelly clay loam
32 to 42 inches; unweathered bedrock

Dissimilar Minor Components

Laufer soils

Percentage of map unit: 5 percent

Nint soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

855—Swauk-Elkheights-Lablue complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau
Elevation: 1,300 to 2,400 feet
Mean annual precipitation: 15 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 140 days

Map Unit Composition

Swauk and similar soils: 35 percent
Elkheights and similar soils: 30 percent
Lablue and similar soils: 25 percent
Dissimilar minor component: 10 percent

Characteristics of Swauk

Setting

Landform: Moraines

Properties and qualities

Parent material: Loess over glacial till
Slope range: 3 to 15 percent
Depth to restrictive feature: 29 to 40 inches to dense material

Soil Survey of Kittitas County Area, Washington

Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e
Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 5 inches; loam
5 to 18 inches; clay loam
18 to 31 inches; clay
31 to 60 inches; gravelly clay loam

Characteristics of Elkheights

Setting

Landform: Hillslopes, moraines

Properties and qualities

Parent material: Alluvium and loess over basal till
Slope range: 3 to 15 percent
Depth to restrictive feature: 40 to 60 inches to dense material
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): High (about 10.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e
Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; loam
8 to 19 inches; loam
19 to 41 inches; loam
41 to 56 inches; gravelly loam
56 to 60 inches; very gravelly sandy clay loam

Characteristics of Lablue

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash
Slope range: 3 to 15 percent
Depth to restrictive feature: 7 to 10 inches to a moderately cemented duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Land capability subclass (irrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 5 inches; ashy clay loam

5 to 8 inches; gravelly clay

8 to 11 inches; cemented material

11 to 37 inches; cemented material

37 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Component

Qualla soils

Percentage of map unit: 10 percent

Major Uses

Cropland, livestock grazing

858—Shinn-Pachneum-Nint complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

8—Columbia Plateau

Elevation: 1,800 to 3,500 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Shinn and similar soils: 40 percent

Pachneum and similar soils: 30 percent

Nint and similar soils: 25 percent

Dissimilar minor components: 5 percent

Characteristics of Shinn

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess and a small amount of volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 6 inches; extremely cobbly clay loam

6 to 9 inches; extremely cobbly clay loam

9 to 18 inches; unweathered bedrock

Characteristics of Pachneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 26 inches; clay loam

26 to 33 inches; clay loam

33 to 47 inches; clay loam

47 to 60 inches; clay loam

Characteristics of Nint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and some residuum derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 5 to 15 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 13 inches; very gravelly clay loam

13 to 19 inches; very gravelly clay loam

19 to 38 inches; very gravelly clay loam

38 to 48 inches; unweathered bedrock

Dissimilar Minor Components

Laufer soils

Percentage of map unit: 3 percent

Rock outcrop

Percentage of map unit: 2 percent

Major Uses

Cropland, livestock grazing

860—Laufer-Thiessen complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

8—Columbia Plateau

Elevation: 2,100 to 3,600 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 100 to 145 days

Map Unit Composition

Laufer and similar soils: 50 percent

Thiessen and similar soils: 40 percent

Dissimilar minor components: 10 percent

Characteristics of Laufer

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and colluvium derived from basalt with loess in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 3 inches; very cobbly loam
3 to 7 inches; very gravelly clay loam
7 to 10 inches; very cobbly clay loam
10 to 15 inches; extremely cobbly clay loam
15 to 25 inches; unweathered bedrock

Characteristics of Thiessen

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium derived from basalt
Slope range: 5 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 3 inches; very cobbly loam
3 to 9 inches; very gravelly clay loam
9 to 22 inches; extremely gravelly clay loam
22 to 32 inches; unweathered bedrock

Dissimilar Minor Components

McDaniel soils

Percentage of map unit: 5 percent

Rock Creek soils

Percentage of map unit: 3 percent

Rock outcrop

Percentage of map unit: 2 percent

Major Use

Livestock grazing

862—Millhouse very cobbly ashy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 2,100 to 3,400 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Millhouse and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Millhouse

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with loess and volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; very cobbly ashy loam

4 to 14 inches; very gravelly ashy loam

14 to 28 inches; extremely gravelly sandy clay loam

28 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Modsel soils

Percentage of map unit: 5 percent

Reelow soils

Percentage of map unit: 5 percent

Reeser soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

864—Reelow very cobbly ashy loam, clayey subsoil, 3 to 15 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 2,100 to 3,400 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Reelow and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Reelow

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 3 to 15 percent

Depth to restrictive feature: 10 to 20 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 3 inches; very cobbly ashy loam

3 to 6 inches; ashy clay loam

6 to 14 inches; gravelly clay

14 to 18 inches; cemented material

18 to 56 inches; cemented material

56 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Components

Lablue soils

Percentage of map unit: 5 percent

Reeser soils

Percentage of map unit: 5 percent

Sketter soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

868—Reelow-Reeser-Lablue complex, 3 to 10 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

8—Columbia Plateau

Elevation: 1,600 to 3,400 feet

Mean annual precipitation: 12 to 15 inches

Soil Survey of Kittitas County Area, Washington

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Reelow and similar soils: 40 percent

Reeser and similar soils: 30 percent

Lablue and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Reelow

Setting

Landform: Fan remnants, terraces, till plains

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 3 to 10 percent

Depth to restrictive feature: 10 to 20 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 6 inches; ashy clay loam

6 to 14 inches; gravelly clay

14 to 18 inches; cemented material

18 to 56 inches; cemented material

56 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Reeser

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 3 to 10 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4e

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; ashy clay loam
6 to 13 inches; ashy clay loam
13 to 22 inches; clay
22 to 26 inches; cemented material
26 to 58 inches; cemented material
58 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Lablue

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash
Slope range: 3 to 10 percent
Depth to restrictive feature: 7 to 10 inches to a moderately cemented duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Land capability subclass (irrigated): 7s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; very gravelly ashy loam
2 to 5 inches; ashy clay loam
5 to 8 inches; gravelly clay
8 to 11 inches; cemented material
11 to 37 inches; cemented material
37 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Component

Sketter soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

869—Weirman complex, drained, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 400 to 2,900 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 180 days

Map Unit Composition

Weirman, very gravelly sandy loam, and similar soils: 55 percent

Weirman, very cobbly sandy loam, and similar soils: 40 percent

Dissimilar minor component: 5 percent

Characteristics of Weirman, Very Gravelly Sandy Loam

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Ecological site: STONY BOTTOM 6-10 PZ (R007XY403WA)

Typical profile

0 to 5 inches; very gravelly sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Characteristics of Weirman, Very Cobbly Sandy Loam

Setting

Landform: Channels in flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Frequent (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Typical profile

0 to 4 inches; very cobbly sandy loam

4 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Kayak soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

870—Millhouse-Metser complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Millhouse and similar soils: 50 percent

Metser and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Millhouse

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with loess and volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; ashy loam

4 to 14 inches; very gravelly ashy loam

14 to 28 inches; extremely gravelly sandy clay loam

28 to 60 inches; extremely gravelly loamy sand

Characteristics of Metser

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 30 to 37 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 7.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 3w

Typical profile

0 to 9 inches; clay loam

9 to 15 inches; clay

15 to 30 inches; clay

30 to 37 inches; very gravelly sandy clay

37 to 60 inches; extremely gravelly sandy clay

Dissimilar Minor Components

Reeser soils

Percentage of map unit: 10 percent

Sketter soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

871—Sketter-Millhouse-Lablue complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Sketter and similar soils: 45 percent

Millhouse and similar soils: 30 percent

Lablue and similar soils: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Sketter

Setting

Landform: Terraces, fan remnants, till plains

Properties and qualities

Parent material: Alluvium and glacial drift over a duripan with an influence of loess mixed with volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; cobbly ashy loam

6 to 10 inches; gravelly ashy loam

10 to 21 inches; extremely cobbly sandy clay

21 to 24 inches; cemented material

24 to 55 inches; cemented material

55 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Millhouse

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium with loess and volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3s

Land capability subclass (irrigated): 3s

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; cobbly ashy loam

4 to 14 inches; very gravelly ashy loam

14 to 28 inches; extremely gravelly sandy clay loam

28 to 60 inches; extremely gravelly loamy sand

Characteristics of Lablue

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 0 to 5 percent

Depth to restrictive feature: 7 to 10 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Land capability subclass (irrigated): 7s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; very cobbly ashy loam
2 to 5 inches; ashy clay loam
5 to 8 inches; gravelly clay
8 to 11 inches; cemented material
11 to 37 inches; cemented material
37 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Component

Reeser soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

872—Elkheights-Swauk complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,800 to 2,900 feet
Mean annual precipitation: 15 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Elkheights and similar soils: 50 percent
Swauk and similar soils: 40 percent
Dissimilar minor component: 10 percent

Characteristics of Elkheights

Setting

Landform: Hillslopes, moraines

Properties and qualities

Parent material: Alluvium and loess over basal till
Slope range: 5 to 15 percent
Depth to restrictive feature: 40 to 60 inches to dense material
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): High (about 10.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; loam

8 to 19 inches; loam

19 to 41 inches; loam

41 to 56 inches; gravelly loam

56 to 60 inches; very gravelly sandy clay loam

Characteristics of Swauk

Setting

Landform: Moraines

Properties and qualities

Parent material: Loess over glacial till

Slope range: 5 to 15 percent

Depth to restrictive feature: 29 to 40 inches to dense material

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 5 inches; loam

5 to 18 inches; clay loam

18 to 31 inches; clay

31 to 60 inches; gravelly clay loam

Dissimilar Minor Component

Qualla soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

873—Lablue-Sketter-Reelow complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Foothills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Lablue and similar soils: 35 percent
Sketter and similar soils: 30 percent
Reelow and similar soils: 30 percent
Dissimilar minor component: 5 percent

Characteristics of Lablue

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 3 to 15 percent

Depth to restrictive feature: 7 to 10 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Land capability subclass (irrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 5 inches; ashy clay loam

5 to 8 inches; gravelly clay

8 to 11 inches; cemented material

11 to 37 inches; cemented material

37 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Sketter

Setting

Landform: Terraces, fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift over a duripan with an influence of loess mixed with volcanic ash in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4e

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; cobbly ashy loam
6 to 10 inches; gravelly ashy loam
10 to 21 inches; extremely cobbly sandy clay
21 to 24 inches; cemented material
24 to 55 inches; cemented material
55 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Reelow

Setting

Landform: Fan remnants, terraces

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash
Slope range: 3 to 15 percent
Depth to restrictive feature: 10 to 20 inches to a moderately cemented duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Very low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; very cobbly ashy loam
2 to 6 inches; ashy clay loam
6 to 14 inches; gravelly clay
14 to 18 inches; cemented material
18 to 56 inches; cemented material
56 to 60 inches; cemented extremely gravelly sandy loam

Dissimilar Minor Component

Reeser soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

875—Reeser-Sketter-Weirman complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Foothills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,700 to 3,100 feet
Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Reeser and similar soils: 40 percent
Sketter and similar soils: 30 percent
Weirman and similar soils: 20 percent
Dissimilar minor component: 10 percent

Characteristics of Reeser

Setting

Landform: Fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; ashy clay loam

6 to 13 inches; ashy clay loam

13 to 22 inches; clay

22 to 26 inches; cemented material

26 to 58 inches; cemented material

58 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Sketter

Setting

Landform: Terraces, fan remnants

Properties and qualities

Parent material: Alluvium and glacial drift over a duripan with an influence of loess mixed with volcanic ash in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to a moderately cemented duripan

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4e

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 6 inches; cobbly ashy loam
6 to 10 inches; gravelly ashy loam
10 to 21 inches; extremely cobbly sandy clay
21 to 24 inches; cemented material
24 to 55 inches; cemented material
55 to 60 inches; cemented extremely gravelly sandy loam

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 3 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Frequent (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Typical profile

0 to 4 inches; very cobbly sandy loam
4 to 15 inches; very gravelly loamy sand
15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Reelow soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

877—Maxhill ashy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Maxhill and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Maxhill

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium or outwash with an influence of loess and volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 2e

Land capability subclass (irrigated): 2e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 7 inches; ashy loam

7 to 13 inches; gravelly ashy loam

13 to 48 inches; very gravelly sandy clay

48 to 60 inches; extremely gravelly loamy coarse sand

Dissimilar Minor Components

Modsel soils

Percentage of map unit: 5 percent

Reeser soils

Percentage of map unit: 5 percent

Sketter soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

878—Nint-Rubble land-Rock outcrop complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

8—Columbia Plateau

Elevation: 2,200 to 4,300 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 49 degrees F

Frost-free period: 110 to 135 days

Map Unit Composition

Nint and similar soils: 40 percent

Rubble land: 35 percent

Rock outcrop: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Nint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and some residuum derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 30 to 75 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 13 inches; very gravelly clay loam

13 to 19 inches; very gravelly clay loam

19 to 38 inches; very gravelly clay loam

38 to 48 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 75 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Camaspatch soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

879—Patron complex, landslide, 15 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,900 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Patron, cobbly ashy silt loam, and similar soils: 50 percent

Patron and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Patron, Cobbly Ashy Silt Loam

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Slope range: 15 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 12 inches; cobbly ashy silt loam

12 to 35 inches; gravelly silty clay loam

35 to 60 inches; very gravelly clay loam

Characteristics of Patron

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 15 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 12 inches; gravelly ashy silt loam

12 to 35 inches; gravelly silty clay loam

35 to 60 inches; very gravelly clay loam

Dissimilar Minor Components

Laufer soils

Percentage of map unit: 5 percent

McDaniel soils

Percentage of map unit: 5 percent

Thiessen soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

880—Elkheights-Qualla complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;

8—Columbia Plateau

Elevation: 1,800 to 2,900 feet

Mean annual precipitation: 15 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 110 to 140 days

Map Unit Composition

Elkheights and similar soils: 45 percent

Qualla and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Elkheights

Setting

Landform: Hillslopes, moraines

Properties and qualities

Parent material: Alluvium and loess over basal till

Slope range: 5 to 15 percent

Depth to restrictive feature: 40 to 60 inches to dense material

Soil Survey of Kittitas County Area, Washington

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; loam

8 to 19 inches; loam

19 to 41 inches; loam

41 to 56 inches; gravelly loam

56 to 60 inches; very gravelly sandy clay loam

Characteristics of Qualla

Setting

Landform: Moraines

Properties and qualities

Parent material: Glacial till with loess in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 28 to 34 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 7 inches; loam

7 to 28 inches; silt loam

28 to 38 inches; silt loam

38 to 42 inches; clay loam

42 to 60 inches; clay loam

Dissimilar Minor Components

Swauk soils

Percentage of map unit: 10 percent

Lablue soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

882—Weirman-Kayak complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 500 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Weirman, very gravelly sandy loam, and similar soils: 40 percent

Weirman, very cobbly sandy loam, and similar soils: 30 percent

Kayak and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Weirman, Very Gravelly Sandy Loam

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Typical profile

0 to 5 inches; very gravelly sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Characteristics of Weirman, Very Cobbly Sandy Loam

Setting

Landform: Channels in flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Frequent (see Water Features table)

Soil Survey of Kittitas County Area, Washington

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w

Typical profile

0 to 4 inches; very cobbly sandy loam

4 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Characteristics of Kayak

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 17 to 29 inches (see Water Features table)

Available water capacity (entire profile): Low (about 5.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; ashy sandy loam

6 to 17 inches; ashy loam

17 to 29 inches; ashy fine sandy loam

29 to 39 inches; fine sandy loam

39 to 60 inches; extremely gravelly sand

Dissimilar Minor Component

Aquolls

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

883—Nint-McDaniel-Laufer complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 3,300 feet

Mean annual precipitation: 15 to 18 inches

Soil Survey of Kittitas County Area, Washington

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 110 to 135 days

Map Unit Composition

Nint and similar soils: 45 percent

McDaniel and similar soils: 30 percent

Laufer and similar soils: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Nint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and some residuum derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 30 to 60 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 13 inches; very gravelly clay loam

13 to 19 inches; very gravelly clay loam

19 to 38 inches; very gravelly clay loam

38 to 48 inches; unweathered bedrock

Characteristics of McDaniel

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 14 inches; gravelly ashy loam
14 to 19 inches; gravelly ashy loam
19 to 24 inches; very cobbly clay loam
24 to 32 inches; very cobbly clay loam
32 to 60 inches; extremely cobbly clay loam

Characteristics of Laufer

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and colluvium derived from basalt with loess in the upper part
Slope range: 30 to 60 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: COOL STONY 16-24 PZ (R006XY203WA)

Typical profile

0 to 3 inches; very cobbly loam
3 to 7 inches; very gravelly clay loam
7 to 10 inches; very cobbly clay loam
10 to 15 inches; extremely cobbly clay loam
15 to 25 inches; unweathered bedrock

Dissimilar Minor Component

Pachneum soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

884—Maxhill very cobbly ashy loam, 0 to 5 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,700 to 3,100 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Maxhill and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Maxhill

Setting

Landform: Alluvial fans, terraces

Properties and qualities

Parent material: Alluvium or outwash with an influence of loess and volcanic ash in the upper part

Slope range: 0 to 5 percent

Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 7 inches; very cobbly ashy loam

7 to 13 inches; gravelly ashy loam

13 to 48 inches; very gravelly sandy clay

48 to 60 inches; extremely gravelly loamy coarse sand

Dissimilar Minor Components

Modsel soils

Percentage of map unit: 5 percent

Reelow soils

Percentage of map unit: 5 percent

Reeser soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

885—Palerf-Ralock-Vantage complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,900 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Palerf and similar soils: 40 percent

Ralock and similar soils: 35 percent

Vantage and similar soils: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 25 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 27 inches; very gravelly clay

27 to 35 inches; extremely gravelly clay

35 to 45 inches; unweathered bedrock

Characteristics of Ralock

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt and alluvium with loess and volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Moderate (about 8.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 4 inches; ashy silt loam

4 to 14 inches; ashy silt loam

14 to 27 inches; silt loam

27 to 36 inches; gravelly loam

36 to 60 inches; gravelly loam

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

886—Camaspatch-Rubble land-Whiskeydick complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 40 percent

Rubble land: 30 percent

Whiskeydick and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 30 to 70 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Whiskeydick

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam
4 to 10 inches; very cobbly clay loam
10 to 27 inches; very cobbly clay
27 to 37 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

887—Lainand-Blint-Rubble land complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Lainand and similar soils: 40 percent

Blint and similar soils: 30 percent

Rubble land: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Lainand

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium mixed with loess and volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 6 inches; ashy loam
6 to 12 inches; ashy loam
12 to 20 inches; cobbly ashy loam

20 to 41 inches; very cobbly clay loam

41 to 60 inches; very cobbly loam

Characteristics of Blint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Volcanic ash over colluvium derived from basalt

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; very cobbly ashy loam

4 to 10 inches; very gravelly ashy loam

10 to 18 inches; very gravelly loam

18 to 22 inches; extremely cobbly silt loam

22 to 32 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

889—Vantage-Palerf-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 3,000 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 40 percent

Palerf and similar soils: 30 percent

Rubble land: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 25 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam
9 to 27 inches; very gravelly clay
27 to 35 inches; extremely gravelly clay
35 to 45 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

890—Camaspatch-Tankseel-Rubble land complex, 45 to 75 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 3,800 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 120 to 135 days

Map Unit Composition

Camaspatch and similar soils: 40 percent

Tanksel and similar soils: 30 percent

Rubble land: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 45 to 70 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Characteristics of Tanksel

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Slope range: 45 to 75 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam
17 to 20 inches; very gravelly clay loam
20 to 28 inches; extremely cobbly clay loam
28 to 38 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 45 to 75 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

891—Tanksel-Rubble land-Rock outcrop complex, 30 to 70 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 3,300 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 120 to 135 days

Map Unit Composition

Tanksel and similar soils: 40 percent
Rubble land: 30 percent
Rock outcrop: 25 percent
Dissimilar minor component: 5 percent

Characteristics of Tanksel

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and slope alluvium with loess and an influence of volcanic ash in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 30 to 70 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 17 inches; very gravelly ashy loam

17 to 20 inches; very gravelly clay loam

20 to 28 inches; extremely cobbly clay loam

28 to 38 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Camaspatch soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

892—*Palerf-Rubble land-Rock outcrop complex, 30 to 70 percent slopes*

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Palerf and similar soils: 45 percent

Rubble land: 30 percent

Rock outcrop: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part

Slope range: 30 to 70 percent

Depth to restrictive feature: 25 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam

9 to 27 inches; very gravelly clay

27 to 35 inches; extremely gravelly clay

35 to 45 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

***893—Rubble land-Camaspach-Rock outcrop complex,
30 to 70 percent slopes***

Map Unit Setting

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,900 to 3,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Rubble land: 45 percent

Camaspach and similar soils: 30 percent

Rock outcrop: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 70 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 30 to 70 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 70 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Palerf soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

894—Vantage-Clerf-Wipple complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 3,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 40 percent

Clerf and similar soils: 30 percent

Wipple and similar soils: 25 percent
Dissimilar minor component: 5 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam

9 to 12 inches; very cobbly clay

12 to 24 inches; very cobbly clay

24 to 34 inches; unweathered bedrock

Characteristics of Wipple

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium derived from basalt with a minor amount of loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 40 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 4.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 6e

Ecological site: STONY 10-16 PZ (R008XY202WA)

Typical profile

0 to 7 inches; cobbly clay loam

7 to 11 inches; very gravelly clay loam

11 to 30 inches; very gravelly clay

30 to 50 inches; very cobbly clay loam

50 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

896—Argabak-Camaspach complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 4,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Argabak and similar soils: 45 percent

Camaspach and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 6 inches; extremely gravelly loam

6 to 16 inches; unweathered bedrock

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 10 percent

Palerf soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

897—Nanum ashy loam, flooded, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Nanum, flooded, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Nanum, Flooded

Setting

Landform: Terraces, alluvial fans

Properties and qualities

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 21 to 28 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 8.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 8 inches; ashy loam

8 to 15 inches; ashy loam

15 to 28 inches; ashy clay loam

28 to 35 inches; very gravelly clay loam

35 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Nack soils

Percentage of map unit: 10 percent

Brickmill soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

898—Shinn-Laufer-Nint complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope;
8—Columbia Plateau

Elevation: 2,600 to 4,200 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 110 to 135 days

Map Unit Composition

Shinn and similar soils: 40 percent

Laufer and similar soils: 30 percent

Nint and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Shinn

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess and a small amount of volcanic ash in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 6 inches; extremely cobbly clay loam

6 to 9 inches; extremely cobbly clay loam

9 to 18 inches; unweathered bedrock

Characteristics of Laufer

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and colluvium derived from basalt with loess in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 3 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: STONY 16-24 PZ (R006XY202WA)

Typical profile

0 to 3 inches; very cobbly loam
3 to 7 inches; very gravelly clay loam
7 to 10 inches; very cobbly clay loam
10 to 15 inches; extremely cobbly clay loam
15 to 25 inches; unweathered bedrock

Characteristics of Nint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and some residuum derived from basalt with an influence of loess and volcanic ash in the upper part
Slope range: 3 to 15 percent
Percentage of surface area covered with stones: 0.01 to 0.1 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e
Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 9 inches; gravelly ashy loam
9 to 13 inches; very gravelly clay loam
13 to 19 inches; very gravelly clay loam
19 to 38 inches; very gravelly clay loam
38 to 48 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

899—Bedron-Nint complex, 15 to 45 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,000 to 3,600 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 49 degrees F

Frost-free period: 110 to 135 days

Map Unit Composition

Bedron and similar soils: 60 percent

Nint and similar soils: 25 percent

Dissimilar minor components: 15 percent

Characteristics of Bedron

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Interbedded sediment, slope alluvium, and loess mixed with volcanic ash

Slope range: 15 to 45 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 8.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 13 inches; ashy loam

13 to 19 inches; clay loam

19 to 27 inches; clay loam

27 to 60 inches; very gravelly clay loam

Characteristics of Nint

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and some residuum derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 15 to 45 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: COOL LOAMY 16-24 PZ (R006XY103WA)

Typical profile

0 to 9 inches; gravelly ashy loam
9 to 13 inches; very gravelly clay loam
13 to 19 inches; very gravelly clay loam
19 to 38 inches; very gravelly clay loam
38 to 48 inches; unweathered bedrock

Dissimilar Minor Components

Shinn soils

Percentage of map unit: 10 percent

Shushuskin soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

900—Deedale clay loam, flooded, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,500 to 2,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 150 days

Map Unit Composition

Deedale, flooded, and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Deedale, Flooded

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: Rare (see Water Features table)
Frequency of ponding: None
Seasonal high water table (minimum depth): About 12 to 19 inches (see Water Features table)
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): High (about 9.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4w
Land capability subclass (irrigated): 4w

Typical profile

0 to 12 inches; clay loam
12 to 25 inches; clay
25 to 31 inches; clay
31 to 54 inches; clay
54 to 60 inches; extremely gravelly sandy clay loam

Dissimilar Minor Components

Mitta soils

Percentage of map unit: 10 percent

Opnish soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

901—Niben-Vantage-Benwy complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,800 to 2,900 feet
Mean annual precipitation: 9 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 170 days

Map Unit Composition

Niben and similar soils: 35 percent
Vantage and similar soils: 30 percent
Benwy and similar soils: 25 percent
Dissimilar minor components: 10 percent

Characteristics of Niben

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum derived from interbedded sediment and slope alluvium
Slope range: 15 to 30 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Soil Survey of Kittitas County Area, Washington

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): High (about 10 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 4 inches; loam
4 to 18 inches; clay loam
18 to 26 inches; clay
26 to 51 inches; clay
51 to 60 inches; clay loam

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part
Slope range: 15 to 30 percent
Depth to restrictive feature: 11 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam
5 to 8 inches; very cobbly clay loam
8 to 18 inches; very cobbly clay
18 to 28 inches; unweathered bedrock

Characteristics of Benwy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Loess, alluvium, and colluvium over a duripan
Slope range: 15 to 30 percent
Depth to restrictive feature: 40 to 60 inches to an indurated duripan
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 3
Available water capacity (entire profile): Moderate (about 8.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 6e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 10 inches; silt loam

10 to 18 inches; silt loam

18 to 33 inches; gravelly silt loam

33 to 45 inches; gravelly silt loam

45 to 55 inches; cemented material

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

902—*Patron-Camaspach complex, 15 to 30 percent slopes*

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,900 to 3,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Patron and similar soils: 60 percent

Camaspach and similar soils: 30 percent

Dissimilar minor components: 10 percent

Characteristics of Patron

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 7.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 12 inches; gravelly ashy silt loam

12 to 35 inches; gravelly silty clay loam

35 to 60 inches; very gravelly clay loam

Characteristics of Camaspatch

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 15 inches; extremely cobbly clay

15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

903—Marlic-Zen-Laric complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Dissected plateaus

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Marlic and similar soils: 45 percent

Zen and similar soils: 25 percent

Laric and similar soils: 20 percent

Dissimilar minor components: 10 percent

Characteristics of Marlic

Setting

Landform: Structural benches

Properties and qualities

Parent material: Residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Land capability subclass (irrigated): 4e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 6 inches; loam

6 to 15 inches; clay loam

15 to 18 inches; gravelly clay loam

18 to 28 inches; unweathered bedrock

Characteristics of Zen

Setting

Landform: Structural benches

Properties and qualities

Parent material: Loess and slope alluvium over basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 7 inches; silt loam

7 to 12 inches; silt loam

12 to 27 inches; clay loam

27 to 30 inches; gravelly clay loam

30 to 40 inches; unweathered bedrock

Characteristics of Laric

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 6-10 PZ (R007XY301WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 9 inches; gravelly clay loam

9 to 19 inches; unweathered bedrock

Dissimilar Minor Components

Palerf soils

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

905—Vantage-Niben-Clerf complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Basalt plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,900 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Vantage and similar soils: 40 percent

Niben and similar soils: 30 percent

Clerf and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Vantage

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 11 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 5 inches; very cobbly loam

5 to 8 inches; very cobbly clay loam

8 to 18 inches; very cobbly clay

18 to 28 inches; unweathered bedrock

Characteristics of Niben

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum derived from interbedded sediment and slope alluvium

Slope range: 3 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 10 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 4 inches; loam

4 to 18 inches; clay loam

18 to 26 inches; clay

26 to 51 inches; clay

51 to 60 inches; clay loam

Characteristics of Clerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 9 inches; very cobbly clay loam
9 to 12 inches; very cobbly clay
12 to 24 inches; very cobbly clay
24 to 34 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

906—Levnik-Nosser-Nevo complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills, dissected plateaus
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,200 to 2,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 135 to 195 days

Map Unit Composition

Levnik and similar soils: 35 percent
Nosser and similar soils: 30 percent
Nevo and similar soils: 25 percent
Dissimilar minor components: 10 percent

Characteristics of Levnik

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum derived from basalt with loess in the upper part
Slope range: 3 to 15 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very gravelly loam
4 to 8 inches; clay loam
8 to 13 inches; gravelly clay
13 to 16 inches; extremely gravelly clay
16 to 26 inches; unweathered bedrock

Characteristics of Nosser

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess, slope alluvium and residuum derived from basalt
Slope range: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 3.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e
Ecological site: LOAMY 6-10 PZ (R007XY102WA)

Typical profile

0 to 3 inches; gravelly loam
3 to 10 inches; clay loam
10 to 18 inches; gravelly clay loam
18 to 22 inches; extremely gravelly clay loam
22 to 32 inches; unweathered bedrock

Characteristics of Nevo

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt
Slope range: 3 to 15 percent
Depth to restrictive feature: 5 to 10 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 6-10 PZ (R007XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 8 inches; very gravelly clay loam

8 to 18 inches; unweathered bedrock

Dissimilar Minor Components

Disage soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

910—Winchester-Sagehill-Burbank complex, 5 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 600 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Winchester and similar soils: 40 percent

Sagehill and similar soils: 30 percent

Burbank and similar soils: 20 percent

Dissimilar minor components: 10 percent

Characteristics of Winchester

Setting

Landform: Dunes, terraces, terrace escarpments

Properties and qualities

Parent material: Glacial outwash, eolian sand

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: SANDS 6-10 PZ (R007XY502WA)

Typical profile

0 to 9 inches; sand

9 to 15 inches; coarse sand

15 to 60 inches; coarse sand

Characteristics of Sagehill

Setting

Landform: Terraces, terrace escarpments

Properties and qualities

Parent material: Lacustrine deposits with a mantle of volcanic ash

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 9.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 6 inches; fine sandy loam

6 to 28 inches; fine sandy loam

28 to 45 inches; fine sandy loam

45 to 60 inches; fine sandy loam

Characteristics of Burbank

Setting

Landform: Terraces, terrace escarpments

Properties and qualities

Parent material: Alluvium, glacial outwash

Slope range: 5 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Very low (about 1.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: SANDS 6-10 PZ (R007XY502WA)

Typical profile

0 to 5 inches; very cobbly loamy sand
5 to 17 inches; very cobbly loamy sand
17 to 60 inches; very gravelly sand

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 5 percent

Nevo soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

911—Sagehill-Burbank-Malaga complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 600 to 1,300 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 135 to 195 days

Map Unit Composition

Sagehill and similar soils: 35 percent
Burbank and similar soils: 30 percent
Malaga and similar soils: 25 percent
Dissimilar minor components: 10 percent

Characteristics of Sagehill

Setting

Landform: Terraces, terrace escarpments

Properties and qualities

Parent material: Lacustrine deposits with a mantle of volcanic ash
Slope range: 30 to 60 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): High (about 9.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 6 inches; fine sandy loam
6 to 28 inches; fine sandy loam
28 to 45 inches; fine sandy loam
45 to 60 inches; fine sandy loam

Characteristics of Burbank

Setting

Landform: Terraces, terrace escarpments

Properties and qualities

Parent material: Alluvium, glacial outwash
Slope range: 30 to 60 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Very low (about 1.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: SANDS 6-10 PZ (R007XY502WA)

Typical profile

0 to 5 inches; very cobbly loamy sand
5 to 17 inches; very cobbly loamy sand
17 to 60 inches; very gravelly sand

Characteristics of Malaga

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash
Slope range: 30 to 60 percent
Depth to restrictive feature: 15 to 28 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 4 inches; gravelly sandy loam
4 to 9 inches; gravelly sandy loam

9 to 12 inches; very gravelly sandy loam
12 to 19 inches; extremely gravelly sandy loam
19 to 60 inches; extremely gravelly coarse sand

Dissimilar Minor Components

Fortyday soils

Percentage of map unit: 5 percent

Winchester soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

914—Disage-Clenage complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Disage and similar soils: 55 percent

Clenage and similar soils: 35 percent

Dissimilar minor components: 10 percent

Characteristics of Disage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 18 inches; very cobbly clay loam

18 to 28 inches; unweathered bedrock

Characteristics of Ctenage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and interbedded sediment mixed with loess

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 16 inches; very gravelly clay loam

16 to 25 inches; very gravelly clay

25 to 35 inches; unweathered bedrock

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Sohappy soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

915—Nosser-Levnik complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Dissected plateaus

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Nosser and similar soils: 50 percent

Levnik and similar soils: 35 percent

Dissimilar minor components: 15 percent

Characteristics of Nosser

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with colluvium and residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 3.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 6-10 PZ (R007XY102WA)

Typical profile

0 to 3 inches; gravelly loam

3 to 10 inches; clay loam

10 to 18 inches; gravelly clay loam

18 to 22 inches; extremely gravelly clay loam

22 to 32 inches; unweathered bedrock

Characteristics of Levnik

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very gravelly loam

4 to 8 inches; clay loam

8 to 13 inches; gravelly clay

13 to 16 inches; extremely gravelly clay

16 to 26 inches; unweathered bedrock

Dissimilar Minor Components

Nevo soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

916—Nosser-Levnik complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Dissected plateaus

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,200 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Nosser and similar soils: 45 percent

Levnik and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Nosser

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess mixed with colluvium and residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 0.5

Available water capacity (entire profile): Low (about 3.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 6-10 PZ (R007XY102WA)

Typical profile

0 to 3 inches; gravelly loam

3 to 10 inches; clay loam

10 to 18 inches; gravelly clay loam

18 to 22 inches; extremely gravelly clay loam

22 to 32 inches; unweathered bedrock

Characteristics of Levnik

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Very low (about 2.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s
Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very gravelly loam
4 to 8 inches; clay loam
8 to 13 inches; gravelly clay
13 to 16 inches; extremely gravelly clay
16 to 26 inches; unweathered bedrock

Dissimilar Minor Components

Nevo soils

Percentage of map unit: 15 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

917—Nevo extremely gravelly sandy loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,300 to 2,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 135 to 195 days

Map Unit Composition

Nevo and similar soils: 85 percent
Dissimilar minor components: 15 percent

Characteristics of Nevo

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt
Slope range: 3 to 15 percent
Depth to restrictive feature: 5 to 10 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.8 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW DESERT PAVEMENT 6-10 PZ (R007XY302WA)

Typical profile

0 to 2 inches; extremely gravelly sandy loam

2 to 8 inches; very gravelly clay loam

8 to 18 inches; unweathered bedrock

Dissimilar Minor Components

Disage soils

Percentage of map unit: 5 percent

Levnik soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

920—Esquatzel-Aquolls-Weirman complex, 0 to 5 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 500 to 2,500 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 130 to 195 days

Map Unit Composition

Esquatzel and similar soils: 40 percent

Aquolls and similar soils: 25 percent

Weirman and similar soils: 25 percent

Dissimilar minor component: 10 percent

Characteristics of Esquatzel

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Soil Survey of Kittitas County Area, Washington

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very high (about 12.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 2e

Ecological site: LOAMY BOTTOM 6-10 PZ (R007XY402WA)

Typical profile

0 to 10 inches; silt loam

10 to 40 inches; silt loam

40 to 60 inches; stratified fine sandy loam to silt loam

Characteristics of Aquolls

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification

Drainage class: Poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Frequent (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): At the soil surface to a depth of 5 inches (see Water Features table)

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 5w

Ecological site: WET ALKALI MEADOW 6-10 PZ (R007XY603WA)

Typical profile

0 to 5 inches; cobbly fine sandy loam

5 to 12 inches; gravelly sandy loam

12 to 18 inches; extremely gravelly sandy loam

18 to 60 inches; extremely gravelly loamy sand

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 5 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Typical profile

0 to 4 inches; very cobbly sandy loam

4 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Kayak soils

Percentage of map unit: 10 percent

Major Uses

Cropland, livestock grazing

921—Fortyday-Nevo-Rock outcrop complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau, 7—Columbia Basin

Elevation: 500 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Fortyday and similar soils: 50 percent

Nevo and similar soils: 25 percent

Rock outcrop: 20 percent

Dissimilar minor component: 5 percent

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; cobbly loam

3 to 6 inches; very gravelly loam

6 to 15 inches; extremely cobbly loam

15 to 25 inches; unweathered bedrock

Characteristics of Nevo

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Residuum derived from basalt

Slope range: 3 to 15 percent

Depth to restrictive feature: 5 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 6-10 PZ (R007XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 8 inches; very gravelly clay loam

8 to 18 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 3 to 15 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Argabak soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

922—Drino-Fortyday complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Soil Survey of Kittitas County Area, Washington

Elevation: 500 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Drino and similar soils: 45 percent

Fortyday and similar soils: 40 percent

Dissimilar minor components: 15 percent

Characteristics of Drino

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 7 inches; very gravelly loam

7 to 19 inches; very gravelly loam

19 to 38 inches; extremely cobbly loam

38 to 48 inches; unweathered bedrock

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; cobbly loam
3 to 6 inches; very gravelly loam
6 to 15 inches; extremely cobbly loam
15 to 25 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

923—Timmerman-Sagehill complex, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 600 to 1,800 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 135 to 195 days

Map Unit Composition

Timmerman and similar soils: 45 percent
Sagehill and similar soils: 40 percent
Dissimilar minor components: 15 percent

Characteristics of Timmerman

Setting

Landform: Outwash terraces, outwash plains

Properties and qualities

Parent material: Glacial outwash and alluvium with an influence of loess in the upper part
Slope range: 3 to 15 percent
Depth to restrictive feature: 13 to 37 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Low (about 4.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e
Land capability subclass (irrigated): 4e
Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 3 inches; sandy loam

3 to 15 inches; sandy loam

15 to 60 inches; loamy coarse sand

Characteristics of Sagehill

Setting

Landform: Terraces

Properties and qualities

Parent material: Lacustrine deposits with a mantle of volcanic ash

Slope range: 3 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 9.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6e

Land capability subclass (irrigated): 3e

Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 6 inches; fine sandy loam

6 to 28 inches; fine sandy loam

28 to 45 inches; fine sandy loam

45 to 60 inches; fine sandy loam

Dissimilar Minor Components

Nevo soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

924—Malaga stony sandy loam, 3 to 15 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau, 7—Columbia Basin

Elevation: 500 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Malaga, stony sandy loam, and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Malaga, Stony Sandy Loam

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash

Slope range: 3 to 15 percent

Depth to restrictive feature: 15 to 28 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Land capability subclass (irrigated): 6s

Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 4 inches; stony sandy loam

4 to 9 inches; gravelly sandy loam

9 to 12 inches; very gravelly sandy loam

12 to 19 inches; extremely gravelly sandy loam

19 to 60 inches; extremely gravelly coarse sand

Dissimilar Minor Components

Nevo soils

Percentage of map unit: 10 percent

Fortyday soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

927—Disage-Sohappy-Clenage complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Disage and similar soils: 40 percent

Sohappy and similar soils: 30 percent

Clenage and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Disage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly clay loam

9 to 18 inches; very cobbly clay loam

18 to 28 inches; unweathered bedrock

Characteristics of Sohappy

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and alluvium over basalt with loess in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 50 to 60 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Available water capacity (entire profile): Moderate (about 8.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 6-10 PZ (R007XY103WA)

Typical profile

0 to 4 inches; silt loam

4 to 32 inches; silt loam

32 to 43 inches; gravelly silt loam

43 to 51 inches; very cobbly loam

51 to 60 inches; unweathered bedrock

Characteristics of Clenage

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and interbedded sediment mixed with loess

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very low (about 2.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very gravelly loam

3 to 16 inches; very gravelly clay loam

16 to 25 inches; very gravelly clay

25 to 35 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

928—Mozen-Argabak-Yrtneg complex, 15 to 30 percent north slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Mozen and similar soils: 40 percent

Argabak and similar soils: 30 percent

Yrtneg and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Mozen

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and residuum derived from basalt with loess and volcanic ash in the upper part

Soil Survey of Kittitas County Area, Washington

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 5 inches; ashy silt loam

5 to 13 inches; ashy silt loam

13 to 22 inches; clay loam

22 to 28 inches; loam

28 to 39 inches; loam

39 to 49 inches; unweathered bedrock

Characteristics of Argabak

Setting

Landform: Structural benches, hillslopes

Properties and qualities

Parent material: Loess and residuum derived from basalt

Slope range: 15 to 30 percent

Depth to restrictive feature: 5 to 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.4 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)

Typical profile

0 to 2 inches; very cobbly loam

2 to 6 inches; extremely gravelly loam

6 to 16 inches; unweathered bedrock

Characteristics of Yrtneg

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and residuum derived from basalt, andesite, and pyroclastic rock with loess mixed with volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 7 inches; ashy loam

7 to 10 inches; ashy loam

10 to 16 inches; clay loam

16 to 19 inches; clay loam

19 to 29 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

929—Neviot-Palerf-Rubble land complex, 30 to 75 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,000 to 2,900 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Neviot and similar soils: 35 percent

Palerf and similar soils: 30 percent

Rubble land: 25 percent

Dissimilar minor components: 10 percent

Characteristics of Neviot

Setting

Landform: Hillslopes, canyons

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 30 to 75 percent

Percentage of surface area covered with stones: 0.01 to 0.1 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Moderate (about 6.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 6 inches; gravelly ashy loam
6 to 12 inches; gravelly ashy loam
12 to 22 inches; very gravelly loam
22 to 40 inches; very gravelly loam
40 to 49 inches; very gravelly loam
49 to 60 inches; very gravelly loam

Characteristics of Palerf

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part
Slope range: 30 to 70 percent
Depth to restrictive feature: 25 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Low (about 3.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 9 inches; gravelly ashy loam
9 to 27 inches; very gravelly clay
27 to 35 inches; extremely gravelly clay
35 to 45 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 75 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Dissimilar Minor Components

Rock outcrop

Percentage of map unit: 5 percent

Vantage soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

932—Volinger-Mozen complex, 15 to 30 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,300 to 2,700 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Volinger and similar soils: 45 percent

Mozen and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Volinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium with an influence of loess and volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 7.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 5 inches; ashy silt loam

5 to 17 inches; ashy silt loam

17 to 39 inches; silty clay loam

39 to 50 inches; silt loam

50 to 58 inches; silt loam

58 to 60 inches; silt loam

Characteristics of Mozen

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and residuum derived from basalt with loess and volcanic ash in the upper part

Slope range: 15 to 30 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 5 inches; ashy silt loam

5 to 13 inches; ashy silt loam

13 to 22 inches; clay loam

22 to 28 inches; loam

28 to 39 inches; loam

39 to 49 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 10 percent

Rock outcrop

Percentage of map unit: 5 percent

Yrtneg soils

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

933—Mozen-Volinger-Yrtneg complex, 5 to 15 percent slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 2,800 feet

Mean annual precipitation: 12 to 15 inches

Soil Survey of Kittitas County Area, Washington

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Mozen and similar soils: 40 percent

Volinger and similar soils: 25 percent

Yrtneg and similar soils: 25 percent

Dissimilar minor components: 10 percent

Characteristics of Mozen

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and residuum derived from basalt with loess and volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 5.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 5 inches; ashy silt loam

5 to 13 inches; ashy silt loam

13 to 22 inches; clay loam

22 to 28 inches; loam

28 to 39 inches; loam

39 to 49 inches; unweathered bedrock

Characteristics of Volinger

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium with an influence of loess and volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Moderate (about 7.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)

Typical profile

0 to 5 inches; ashy silt loam

5 to 17 inches; ashy silt loam

17 to 39 inches; silty clay loam

39 to 50 inches; silt loam

50 to 58 inches; silt loam

58 to 60 inches; silt loam

Characteristics of Yrtneg

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and residuum derived from basalt, andesite, and pyroclastic rock with loess mixed with volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 3.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: COOL STONY 10-16 PZ (R008XY203WA)

Typical profile

0 to 7 inches; ashy loam

7 to 10 inches; ashy loam

10 to 16 inches; clay loam

16 to 19 inches; clay loam

19 to 29 inches; unweathered bedrock

Dissimilar Minor Components

Argabak soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Cropland, livestock grazing

936—Shushuskin-Pachneum-Shinn complex, 3 to 15 percent north slopes

Map Unit Setting

General landscape: Dissected plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Soil Survey of Kittitas County Area, Washington

Elevation: 2,200 to 3,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Shushuskin and similar soils: 40 percent

Pachneum and similar soils: 30 percent

Shinn and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Shushuskin

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Slope alluvium and some residuum derived from basalt with loess and an influence of volcanic ash in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Low (about 5.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 4 inches; ashy loam

4 to 8 inches; ashy loam

8 to 13 inches; ashy loam

13 to 19 inches; loam

19 to 23 inches; clay loam

23 to 32 inches; very gravelly clay loam

32 to 42 inches; unweathered bedrock

Characteristics of Pachneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 8 inches; ashy loam

8 to 18 inches; ashy loam

18 to 26 inches; clay loam

26 to 33 inches; clay loam

33 to 47 inches; clay loam

47 to 60 inches; clay loam

Characteristics of Shinn

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess and a small amount of volcanic ash in the upper part

Slope range: 3 to 15 percent

Depth to restrictive feature: 4 to 10 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.7 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: VERY SHALLOW 16-24 PZ (R006XY301WA)

Typical profile

0 to 2 inches; very cobbly ashy loam

2 to 6 inches; extremely cobbly clay loam

6 to 9 inches; extremely cobbly clay loam

9 to 18 inches; unweathered bedrock

Dissimilar Minor Component

Rock outcrop

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

940—Renslow silt loam, 5 to 10 percent slopes

Map Unit Setting

General landscape: Loess plateaus, hills

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Elevation: 1,400 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Renslow and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Renslow

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess

Slope range: 5 to 10 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 3e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 11 inches; silt loam

11 to 22 inches; silt loam

22 to 36 inches; silt loam

36 to 60 inches; silt loam

Dissimilar Minor Component

Zen soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

941—Renslow silt loam, 10 to 15 percent slopes

Map Unit Setting

General landscape: Loess plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Renslow and similar soils: 90 percent

Dissimilar minor component: 10 percent

Characteristics of Renslow

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Loess

Slope range: 10 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): High (about 12 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 11 inches; silt loam

11 to 22 inches; silt loam

22 to 36 inches; silt loam

36 to 60 inches; silt loam

Dissimilar Minor Component

Zen soils

Percentage of map unit: 10 percent

Major Uses

Livestock grazing, cropland

944—Rubble land-Fortyday-Rock outcrop complex, 40 to 90 percent slopes

Map Unit Setting

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Elevation: 500 to 3,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Rubble land: 40 percent

Fortyday and similar soils: 30 percent

Rock outcrop: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Rubble Land

Properties and qualities

Slope range: 40 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Fortyday

Setting

Landform: Hillslopes, structural benches

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 40 to 70 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: STONY 6-10 PZ (R007XY202WA)

Typical profile

0 to 3 inches; very stony loam

3 to 6 inches; very gravelly loam

6 to 15 inches; extremely cobbly loam

15 to 25 inches; unweathered bedrock

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 40 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Dissimilar Minor Component

Argabak soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

948—Hardmauk-Teanaway complex, 25 to 50 percent slopes

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 3,600 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Hardmauk and similar soils: 70 percent

Teanaway and similar soils: 25 percent

Dissimilar minor component: 5 percent

Characteristics of Hardmauk

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Loess over basal till with a minor influence of volcanic ash in the upper part

Slope range: 25 to 50 percent

Depth to restrictive feature: 45 to 60 inches to dense material

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Very low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 29 to 35 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 7.1 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/pinegrass (CDG131)

Typical profile

0 to 1 inch; slightly decomposed plant material

1 to 5 inches; ashy loam

5 to 11 inches; loam

11 to 20 inches; loam

20 to 38 inches; gravelly clay loam

38 to 50 inches; gravelly sandy clay loam

50 to 60 inches; very gravelly sandy clay loam

Characteristics of Teanaway

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Loess over glacial till or outwash with an influence of volcanic ash in the upper part

Slope range: 25 to 50 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 39 to 51 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 3 inches; moderately decomposed plant material

3 to 7 inches; ashy loam

7 to 22 inches; loam

22 to 42 inches; loam

42 to 51 inches; loam

51 to 60 inches; gravelly loam

Dissimilar Minor Component

Nard soils

Percentage of map unit: 5 percent

Major Uses

Timber production, livestock grazing

954—Esquatzel silt loam, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 2,200 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 130 to 200 days

Map Unit Composition

Esquatzel and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Esquatzel

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1
Available water capacity (entire profile): Very high (about 12.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w
Land capability subclass (irrigated): 3w
Ecological site: LOAMY BOTTOM 6-10 PZ (R007XY402WA)

Typical profile

0 to 10 inches; silt loam
10 to 40 inches; silt loam
40 to 60 inches; stratified fine sandy loam to silt loam

Dissimilar Minor Components

Aquolls

Percentage of map unit: 5 percent

Weirman soils

Percentage of map unit: 5 percent

Zen soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

955—Esquatzel-Weirman complex, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys
Major land resource area (MLRA): 8—Columbia Plateau
Elevation: 1,100 to 2,900 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 130 to 195 days

Map Unit Composition

Esquatzel and similar soils: 40 percent
Weirman and similar soils: 25 percent
Weirman, very cobbly sandy loam, and similar soils: 25 percent
Dissimilar minor component: 10 percent

Characteristics of Esquatzel

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium
Slope range: 0 to 2 percent
Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: Rare (see Water Features table)
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Soil Survey of Kittitas County Area, Washington

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Very high (about 12.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3c

Land capability subclass (irrigated): 2c

Ecological site: LOAMY BOTTOM 6-10 PZ (R007XY402WA)

Typical profile

0 to 10 inches; silt loam

10 to 40 inches; silt loam

40 to 60 inches; stratified fine sandy loam to silt loam

Characteristics of Weirman

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Typical profile

0 to 5 inches; fine sandy loam

5 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Characteristics of Weirman, Very Cobbly Sandy Loam

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Occasional (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.2 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Typical profile

0 to 4 inches; very cobbly sandy loam

4 to 15 inches; very gravelly loamy sand

15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Component

Aquolls

Percentage of map unit: 10 percent

Major Uses

Cropland, livestock grazing

957—Kayak-Weirman complex, rarely flooded, 0 to 2 percent slopes

Map Unit Setting

General landscape: Valleys

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 1,600 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Map Unit Composition

Kayak, rarely flooded, and similar soils: 55 percent

Weirman, rarely flooded, and similar soils: 25 percent

Dissimilar minor components: 20 percent

Characteristics of Kayak, Rarely Flooded

Setting

Landform: Flood plains

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Somewhat poorly drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: Rare (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 17 to 29 inches (see Water Features table)

Available water capacity (entire profile): Moderate (about 6.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3w

Land capability subclass (irrigated): 3w

Typical profile

0 to 6 inches; ashy loam

6 to 17 inches; ashy loam

17 to 29 inches; ashy fine sandy loam
29 to 39 inches; fine sandy loam
39 to 60 inches; extremely gravelly sand

Characteristics of Weirman, Rarely Flooded

Setting

Landform: Flood plains, terraces

Properties and qualities

Parent material: Alluvium

Slope range: 0 to 2 percent

Depth to restrictive feature: 3 to 18 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: Rare (see Water Features table)

Frequency of ponding: None

Seasonal high water table (minimum depth): About 42 to 60 inches (see Water Features table)

Available water capacity (entire profile): Very low (about 2.5 inches)

Interpretive groups

Land capability subclass (nonirrigated): 4s

Land capability subclass (irrigated): 4s

Typical profile

0 to 9 inches; gravelly sandy loam
9 to 15 inches; very gravelly loamy sand
15 to 60 inches; extremely gravelly loamy sand

Dissimilar Minor Components

Aquolls

Percentage of map unit: 10 percent

Esquatzel soils

Percentage of map unit: 10 percent

Major Uses

Cropland, livestock grazing

958—Grinrod-Horseflat complex, 45 to 60 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,400 to 2,100 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Map Unit Composition

Grinrod and similar soils: 45 percent

Horseflat and similar soils: 35 percent

Dissimilar minor components: 20 percent

Characteristics of Grinrod

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 45 to 60 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 2.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 10 inches; very gravelly loam

10 to 27 inches; very gravelly loam

27 to 37 inches; unweathered bedrock

Characteristics of Horseflat

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from basalt with loess in the upper part

Slope range: 45 to 60 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 1.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 4 inches; very cobbly loam

4 to 9 inches; very gravelly loam

9 to 16 inches; extremely gravelly loam

16 to 26 inches; unweathered bedrock

Dissimilar Minor Components

Vantage soils

Percentage of map unit: 10 percent

Clerf soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

960—Winchester-Burbank-Malaga complex, 30 to 60 percent slopes

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 7—Columbia Basin, 8—Columbia Plateau

Elevation: 500 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Map Unit Composition

Winchester and similar soils: 35 percent

Burbank and similar soils: 30 percent

Malaga and similar soils: 20 percent

Dissimilar minor components: 15 percent

Characteristics of Winchester

Setting

Landform: Dunes, terraces, terrace escarpments

Properties and qualities

Parent material: Glacial outwash, eolian sand

Slope range: 30 to 60 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): High

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Sodium adsorption ratio about 1

Available water capacity (entire profile): Low (about 3.6 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e

Ecological site: SANDS 6-10 PZ (R007XY502WA)

Typical profile

0 to 9 inches; sand

9 to 15 inches; coarse sand

15 to 60 inches; coarse sand

Characteristics of Burbank

Setting

Landform: Terraces, terrace escarpments

Properties and qualities

Parent material: Alluvium, glacial outwash

Slope range: 30 to 60 percent

Soil Survey of Kittitas County Area, Washington

Depth to restrictive feature: None within a depth of 60 inches
Drainage class: Excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): High
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Sodium adsorption ratio about 0.5
Available water capacity (entire profile): Very low (about 1.9 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: SANDS 6-10 PZ (R007XY502WA)

Typical profile

0 to 5 inches; very cobbly loamy sand
5 to 17 inches; very cobbly loamy sand
17 to 60 inches; very gravelly sand

Characteristics of Malaga

Setting

Landform: Terraces

Properties and qualities

Parent material: Glacial outwash
Slope range: 30 to 60 percent
Depth to restrictive feature: 15 to 28 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Salinity (maximum): Nonsaline (about 1 millimho per centimeter)
Available water capacity (entire profile): Low (about 3.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7e
Ecological site: SANDY 6-10 PZ (R007XY501WA)

Typical profile

0 to 4 inches; gravelly sandy loam
4 to 9 inches; gravelly sandy loam
9 to 12 inches; very gravelly sandy loam
12 to 19 inches; extremely gravelly sandy loam
19 to 60 inches; extremely gravelly coarse sand

Dissimilar Minor Components

Clenage soils

Percentage of map unit: 5 percent

Esquatzel soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

963—Dumps, landfill

Map Unit Setting

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,500 to 2,700 feet

Map Unit Composition

Dumps, landfill: 100 percent

Characteristics of Dumps, Landfill

Properties and qualities

Depth to restrictive feature: None within a depth of 60 inches

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

966—Ellisforde silt loam, 8 to 15 percent slopes

Map Unit Setting

General landscape: Old lake plains

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 700 to 740 feet

Mean annual precipitation: 8 to 12 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 135 to 190 days

Map Unit Composition

Ellisforde and similar soils: 90 percent

Dissimilar minor components: 10 percent

Characteristics of Ellisforde

Setting

Landform: Lake terraces

Properties and qualities

Parent material: Loess over lacustrine deposits

Slope range: 8 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Salinity (maximum): Very slightly saline (about 3 millimhos per centimeters)

Sodicity (maximum): Sodium adsorption ratio about 2.5

Available water capacity (entire profile): High (about 10.8 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Ecological site: DRY LOAMY 10-16 PZ (R008XY101WA)

Typical profile

0 to 6 inches; silt loam

6 to 16 inches; silt loam

16 to 28 inches; silt loam

28 to 60 inches; stratified very fine sandy loam to silt loam

Dissimilar Minor Components

Grinrod soils

Percentage of map unit: 5 percent

Nevo soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

980—Rock Creek very stony silt loam, 0 to 30 percent slopes

Map Unit Setting

General landscape: Plateaus, hills

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope

Elevation: 2,000 to 3,400 feet

Mean annual precipitation: 10 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 120 to 170 days

Map Unit Composition

Rock Creek and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Rock Creek

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Residuum derived from basalt

Slope range: 0 to 30 percent

Depth to restrictive feature: 8 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Very low (about 0.8 inch)

Interpretive groups

Land capability subclass (nonirrigated): 7s

Ecological site: DRY STONY 10-16 PZ (R008XY201WA)

Typical profile

0 to 2 inches; very stony silt loam
2 to 14 inches; extremely cobbly clay loam
14 to 18 inches; unweathered bedrock

Dissimilar Minor Components

Camaspatch soils

Percentage of map unit: 10 percent

Tanksel soils

Percentage of map unit: 5 percent

Major Use

Livestock grazing

981—*Taneum loam, 5 to 15 percent slopes*

Map Unit Setting

General landscape: Hills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 2,900 to 3,500 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 49 degrees F

Frost-free period: 120 to 135 days

Map Unit Composition

Taneum and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of Taneum

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium and residuum derived from sandstone with loess and a minor amount of volcanic ash in the upper part

Slope range: 5 to 15 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): High (about 10.4 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 14 inches; loam
14 to 43 inches; clay loam
43 to 60 inches; loam

Dissimilar Minor Components

Rock Creek soils

Percentage of map unit: 10 percent

McDaniel soils

Percentage of map unit: 5 percent

Major Uses

Livestock grazing, cropland

1006—Rock outcrop-Rubble land-Glaciers, icefields complex, 30 to 90 percent slopes

Map Unit Setting

Major land resource area (MLRA): 3—Olympic and Cascade Mountains

Elevation: 2,900 to 7,900 feet

Map Unit Composition

Rock outcrop: 45 percent

Rubble land: 35 percent

Glaciers, icefields: 20 percent

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Characteristics of Rubble Land

Properties and qualities

Slope range: 30 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Excessively drained

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; fragmental material

Characteristics of Glaciers, Icefields

Properties and qualities

Slope range: 30 to 90 percent

Depth to restrictive feature: None within a depth of 60 inches

Capacity of the most limiting soil layer to transmit water (Ksat): Unspecified

Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches

Interpretive groups

Land capability subclass (nonirrigated): 8

Typical profile

0 to 60 inches; consolidated permafrost (ice rich)

Major Uses

Wildlife habitat, recreation

1007—Rock outcrop-Andic Humicryods complex, 30 to 90 percent slopes

Map Unit Setting

Major land resource area (MLRA): 3—Olympic and Cascade Mountains
Elevation: 3,000 to 6,400 feet
Mean annual precipitation: 85 to 130 inches
Mean annual air temperature: 35 to 39 degrees F
Frost-free period: 35 to 80 days

Map Unit Composition

Rock outcrop: 60 percent
Andic Humicryods and similar soils: 40 percent

Characteristics of Rock Outcrop

Properties and qualities

Slope range: 30 to 90 percent

Interpretive groups

Land capability subclass (nonirrigated): 8s

Typical profile

0 to 60 inches; unweathered bedrock

Characteristics of Andic Humicryods

Setting

Landform: Mountain slopes, cirques

Properties and qualities

Parent material: Colluvium derived from various rock sources mixed with volcanic ash
Slope range: 30 to 90 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high
Frequency of flooding: None
Frequency of ponding: None
Seasonal high water table (minimum depth): More than 72 inches
Available water capacity (entire profile): Low (about 3.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 7s
Forest Service plant community class: Mountain hemlock/pink mountainheath-
Cascade huckleberry (CMS354)

Typical profile

0 to 2 inches; moderately decomposed plant material
2 to 5 inches; very cobbly ashy sandy loam
5 to 11 inches; cobbly medial loam
11 to 24 inches; very cobbly medial loam
24 to 37 inches; extremely cobbly loam
37 to 47 inches; unweathered bedrock

Major Uses

Recreation, wildlife habitat

1441—*Teanaway ashy loam, 10 to 25 percent slopes*

Map Unit Setting

General landscape: Mountains

Major land resource area (MLRA): 6—Cascade Mountains, Eastern Slope

Elevation: 1,800 to 3,600 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 80 to 120 days

Map Unit Composition

Teanaway and similar soils: 80 percent

Dissimilar minor components: 20 percent

Characteristics of Teanaway

Setting

Landform: Mountain slopes

Properties and qualities

Parent material: Loess over glacial till or outwash with an influence of volcanic ash in the upper part

Slope range: 10 to 25 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Moderately well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately low

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): About 39 to 51 inches (see Water Features table)

Available water capacity (entire profile): High (about 10.3 inches)

Interpretive groups

Land capability subclass (nonirrigated): 3e

Land capability subclass (irrigated): 4e

Forest Service plant community class: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 3 inches; moderately decomposed plant material
3 to 7 inches; ashy loam
7 to 22 inches; loam
22 to 42 inches; loam
42 to 51 inches; loam
51 to 60 inches; gravelly loam

Dissimilar Minor Components

Ampad soils

Percentage of map unit: 10 percent

Nard soils

Percentage of map unit: 5 percent

Swauk soils

Percentage of map unit: 5 percent

Major Use

Cropland

6710—McDaniel very stony ashy loam, 3 to 30 percent slopes

Map Unit Setting

General landscape: Foothills

Major land resource area (MLRA): 8—Columbia Plateau

Elevation: 1,800 to 3,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 100 to 135 days

Map Unit Composition

McDaniel and similar soils: 85 percent

Dissimilar minor components: 15 percent

Characteristics of McDaniel

Setting

Landform: Hillslopes

Properties and qualities

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 3 to 30 percent

Depth to restrictive feature: None within a depth of 60 inches

Drainage class: Well drained

Capacity of the most limiting soil layer to transmit water (Ksat): Moderately high

Frequency of flooding: None

Frequency of ponding: None

Seasonal high water table (minimum depth): More than 72 inches

Available water capacity (entire profile): Moderate (about 6.7 inches)

Interpretive groups

Land capability subclass (nonirrigated): 6s

Ecological site: LOAMY 16-24 PZ (R006XY102WA)

Typical profile

0 to 11 inches; very stony ashy loam

11 to 19 inches; gravelly ashy loam

19 to 24 inches; very cobbly clay loam

24 to 32 inches; very cobbly clay loam

32 to 60 inches; extremely cobbly clay loam

Dissimilar Minor Components

Clint soils

Percentage of map unit: 5 percent

Rock Creek soils

Percentage of map unit: 5 percent

Rock outcrop

Percentage of map unit: 5 percent

Major Use

Livestock grazing

DAM—Dam

Map unit composition: Dams—100 percent

Land capability subclass (nonirrigated): 8

W—Water

Major land resource area (MLRA): 8—Columbia Plateau; 6—Cascade Mountains, Eastern Slope; 3—Olympic and Cascade Mountains; 7—Columbia Basin

Map unit composition: Water—100 percent

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Soil Survey Information on the Internet

Soil survey reports have traditionally contained tables providing interpretations regarding the use of the soils. The interpretation tables for this survey as well as the soil properties tables contained in this report are available online from the Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov/app/> and Soil Data Mart at <http://soildatamart.nrcs.usda.gov>.

The interpretation information is provided online instead of in this publication so that the information can be more readily updated. The information on the Web Soil Survey is the official soil survey information.

The information listed below is currently available online for each soil map unit component. This list will expand with time as additional reports and interpretations are developed.

Soil Properties and Qualities

Soil chemical properties: Content of calcium carbonate, cation-exchange capacity, electrical conductivity (EC), pH, content of gypsum, and sodium adsorption ratio

Soil Survey of Kittitas County Area, Washington

Soil erosion factors: K-factor (whole soil and rock free), T-factor, wind erodibility group, and wind erodibility index

Soil physical properties: Available water capacity; bulk density; linear extensibility; content of organic matter, clay, sand, and silt; saturated hydraulic conductivity; surface texture; water content; liquid limit; and plasticity index

Soil qualities and features: Depth to restrictive layer, drainage class, frost action, hydrologic soil group, parent material, Unified soil classification, and AASHTO group classification

Water features: Depth to water table and frequency of flooding and ponding

Suitabilities and Limitations for Use

Building site development: Risk of corrosion of steel and concrete and suitability for shallow excavations, dwellings, and other uses

Construction materials: Potential as a source of gravel, sand, roadfill, topsoil, and other material

Disaster recovery planning: Suitability for disposal of animal carcasses in case of catastrophic mortality, suitability as a location for a composting facility, and other ratings

Land classification: Ecological site name and ID (number), farmland classification (prime, unique, and statewide importance), hydric rating by map unit, irrigated and nonirrigated capability class and subclass, conservation tree and shrub suitability group, and forage suitability group

Land management: Forestry and rangeland interpretations

Military operations: Vehicle trafficability, suitability for evacuations, and other ratings

Recreational development: Suitability for camp areas, off-road motorcycle trails, paths and trails, picnic areas, and playgrounds

Sanitary facilities: Suitability for septic tank absorption fields, sanitary landfills, sewage lagoons, and daily cover for landfill

Vegetative productivity: Forest productivity, crop productivity index, range production, and yields of irrigated and nonirrigated crops by map unit or component

Waste management: Disposal of wastewater, treatment of wastewater, land application of sewage sludge, and disposal of manure and food-processing waste

Water management: Suitability for irrigation, pond reservoir areas, excavated ponds, and embankments, dikes, and levees

Soil Reports

Building site development: Dwellings and small commercial buildings; and roads and streets, shallow excavations, and lawns and landscaping

Construction materials: Source of reclamation material, roadfill, and topsoil

Land classifications: Land capability classification, prime and other important farmland, taxonomic classification of the soils, hydric soils, and conservation tree and shrub suitability group

Land management: Forestland and rangeland

Recreational development: Camp areas, picnic areas, and playgrounds; and paths, trails, and golf fairways

Sanitary facilities: Landfills and sewage disposal

Soil chemical properties: Cation-exchange capacity, soil reaction, content of calcium carbonate and gypsum, salinity, and sodium adsorption ratio

Soil erosion: RUSLE2 related attributes and windbreaks and environmental plantings

Soil physical properties: Engineering properties, physical soil properties, and particle-size and coarse fragments

Soil qualities and features: Restrictive layer, subsidence, potential for frost action, and risk of corrosion

Vegetative productivity: Forestland productivity, rangeland productivity, and irrigated and nonirrigated yields

Waste management: Agricultural disposal of manure, food-processing waste, and sewage sludge; agricultural disposal of wastewater by irrigation and overland flow; agricultural disposal of wastewater by rapid infiltration and slow rate treatment; and large animal carcass disposal

Water features: Hydrologic group, surface runoff, water table, ponding, and flooding

Water management: Ponds and embankments and irrigation

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained and prime and statewide important farmland are described.

Each area of cropland in the survey area has a unique combination of soils, slopes, elevation, climate, plants, and other characteristics. These characteristics should be considered in a cropland management system to maintain or improve the quality of the environment. This system should maintain or improve crop production and protect the soils from erosion while conserving energy resources and maintaining or improving the quality of both surface water and groundwater.

About 91,000 acres of the survey area is irrigated cropland. A wide variety of crops are grown under irrigation, including timothy and alfalfa hay, apples, pears, mint, hops, beans, sweet corn, potatoes, grapes, pasture, and small grain. The acreages of irrigated corn, small grain, and potatoes fluctuate based on market value and the crop rotations used.

About 11,000 acres of the area is nonirrigated cropland. About 5,000 acres of this cropland has historically been under the traditional winter wheat/summer fallow rotation. Presently, 90 percent of the acreage under this traditional rotation is in the Conservation Reserve program. The remaining 6,000 acres of nonirrigated cropland is mostly pastureland within areas of irrigated cropland.

Most of the lower elevations of the survey area have a Mediterranean climate with warm, dry summers and cool, moist winters. The upper and lower parts of Kittitas Valley are influenced by cold air drainage from the mountains. Wind also comes over the Cascade Range at Snoqualmie Pass and flows down through the upper part of the valley, increasing in speed as it enters the lower part of the valley. The climatic conditions have a strong influence on agricultural crops. The upper part of the valley has a frost-free season of about 80 to 110 days, and the lower part has a frost-free season of about 125 to 150 days. The soil temperatures are relatively low in the early part of the growing season, which can delay plant growth and decrease the availability of nitrogen and other nutrients.

Wind erosion is a concern on some of the soils in the survey area. Management practices that protect the soil from wind erosion in spring generally focus on cropping perpendicular to the direction of the wind, leaving the surface rough, and maintaining adequate levels of residue on the surface. Windbreaks of trees and shrubs can also help to protect the soil by reducing the velocity of the wind.

Erosion control practices may include using an adapted crop rotation with grasses and legumes, practicing minimum tillage, maintaining crop residue, seeding early in fall, chiseling in fall, using cover crops, and installing windbreaks and grassed waterways. Conservation practices that protect the soil from erosion may also provide environmental, production, and energy benefits.

In nonirrigated areas, wind and water erosion can be minimized by seeding fall grain early, applying nitrogen, using minimum tillage, stripcropping fields, and tilling across the slope. Chiseling and subsoiling the stubble fields in fall on the contour or across the slope slows runoff and increases the water intake rate. Terraces and diversions,

which are most practical for use on deep and moderately deep soils, reduce the length of slopes and thereby minimize runoff and erosion. The shallow Marlic and Yrtneg soils are not suited to nonirrigated cultivation; they should be seeded to permanent grass.

Conservation practices that enhance the environment may include developing water facilities, installing fish screens in streams at water diversions, developing improved irrigation systems, incorporating perennial crops into crop rotations, leaving some standing grain for wildlife, and establishing wildlife areas. Environmental concerns, mostly relating to water quality, should be addressed. Practices include proper use of agricultural chemicals and fertilizers, proper disposal of empty containers, trapping of sediment in debris basins, and proper disposal of animal waste.

Approximately 60 percent of the irrigated soils in the survey area are moderately well drained. They are affected by a seasonal high water table, which is irrigation induced on many soils. Careful water management should be practiced in low lying areas to prevent elevation of the water table into the root zone. This is especially important for soils that are fine textured and have restrictive features. Most of these soils require drainage for maximum crop production. Subsurface drainage systems should be designed according to the permeability of the soils. Narrower spacing is needed in areas where permeability is lower. The amount of water to be drained should determine the size of the drain pipe and the gradient. All drainage systems should be discharged to an acceptable drainage course. Some wet soils may need amendments to facilitate leaching of excess sodium. Drainage systems need to be maintained to ensure continued productivity. Wetland determinations need to be conducted prior to installing a drainage system to comply with existing laws and regulations and to prevent drainage of natural wetland. Many of the existing wet areas provide critical habitat for wildlife, groundwater recharge, sinks for sediment, cycling of nutrients, temporary water storage, and aesthetic value.

Some of the well drained soils in irrigated areas are suited to orchards if air drainage is adequate. Frost control is needed in areas where frosts occur late in spring. Frost control can be achieved by using orchard heaters, wind machines, and over-tree or under-tree sprinklers. In frost-prone areas, it is especially important when replanting to consider use of varieties of fruit trees that develop later in spring and are less susceptible to frost damage. Where possible, trees should be planted up and down the slope, rather than across the slope, to allow for better air drainage.

Generally, soils that have a relatively high content of organic matter have good tilth. As tilth increases, soil erosion and surface crusting decrease and the water intake rate increases. Therefore, it is important to include crops in the cropping system that will maintain or improve the content of organic matter. This can be done by incorporating as much residue as possible into the soil and by rotating high-residue crops, such as grain, grasses, legumes, and corn, with low-residue row crops. Adequate nitrogen fertilizer is needed to facilitate the decomposition of residue to organic matter.

Cropping systems that keep plant cover and residue on the soil surface during critical periods also reduce the risk of soil erosion. Rotating close-growing crops, such as grasses and alfalfa, into the cropping system on sloping soils minimizes erosion by protecting the soil surface and increasing the water intake rate. The use of minimum tillage, no-till farming, and high-residue crops, such as wheat and corn, reduces the percentage of the surface exposed, which minimizes sealing of the surface, slows runoff, and minimizes the risk of erosion. Growing cover crops in vineyards and orchards during the irrigation season also minimizes erosion.

Irrigation water management and proper design of irrigation systems should address the major resource conservation concerns in irrigated areas. If irrigation water is applied at too high a rate, runoff and soil erosion can result. Erosion is a concern because it can reduce the amount of surface material. The surface layer is the most

fertile and productive part of the soil profile because it contains the most organic matter and available plant nutrients. With the loss of organic matter, the structure of the soil deteriorates, resulting in crusting and sealing of the soil surface, a decrease in the available water capacity and water intake rate, and loss of tilth. Also, the limey subsoil material can be exposed, lowering the amount of available nutrients and slowing moisture uptake. Examples of soils that have a limey subsoil and a lime- and silica-cemented hardpan are the Terland and Selah soils. In addition to reducing the productivity of the soil, erosion can also add sediment, nutrients, and pesticides to surface water, having a detrimental effect offsite. Use of polymers on surface-irrigated systems can greatly reduce the risk of irrigation-induced erosion.

Furrow, corrugation, sprinkler, and drip irrigation systems are used in the survey area. About 90 percent of the irrigated cropland is under a surface irrigation system, and about 10 percent is under a sprinkler irrigation system. New technology is changing the methods of irrigation to more unique and efficient systems. Sprinkler and drip systems are suited to all of the soils in the survey area. These systems permit an even, controlled application of irrigation water and if managed properly, minimize the risk of erosion and leaching of plant nutrients. Furrow and corrugation irrigation systems are used on most of the soils that have slopes of less than 5 percent. Use of surface systems on the shallow Terland, Durtash, and Marlic soils is not practical regardless of the slope because the risk of erosion of the furrows is too high. These soils are suited to sprinkler, drip, and trickle systems. Using a cropping system that provides continuous plant cover, such as hay and pasture, or growing perennial cover crops in orchards reduces the risk of erosion.

Excessive erosion, loss of water as a result of deep percolation, and leaching can occur on the Weirman and Meimrick soils because of the rapid permeability and the high flows needed for water to reach the full length of the furrows. These soils are not suited to surface irrigation systems, but they are suited to sprinkler, trickle, or drip systems. Because of the droughtiness of the soils, frequent, light applications of water are needed. Unless irrigated, these soils are poorly suited to cultivation.

When proper irrigation water management is practiced, the correct volume, frequency, and rate of application occur in a planned, efficient manner. To minimize soil erosion, runoff, and leaching, applications of irrigation water should be adjusted to the available water capacity and intake rate of the soils and to the needs of the crop grown.

Compaction and breakdown of soil structure caused by excessive tillage and continuous use of heavy equipment are common on soils that have texture of clay loam, silt loam, or loam. These reduce the water intake rate and increase the risk of erosion. Soil compaction can be minimized by using minimum tillage, using close-growing crops, managing crop residue, and properly timing tillage in relation to moisture content. Tillage pans can be broken up by subsoiling and chiseling when the soil is dry. Use of minimum tillage and crop residue helps to maintain soil structure.

Detailed soil information is available online from the Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov>. Additional information can also be obtained from the local offices of the Natural Resources Conservation Service or the Cooperative Extension Service.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that

would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961). Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The capability classification of the soils in this survey area is given in the section “Detailed Soil Map Units” and in [table 5](#).

Prime Farmland

[Table 6](#) lists the map units in the survey area that are considered prime farmland and farmland of statewide importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation’s food supply.

Prime farmland is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the

U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 94,000 acres, or about 8 percent, of the total acreage of the survey area, meets the requirements for prime farmland. Scattered areas are throughout the survey area, but most areas are in the south-central and central parts.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

For some soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

In some areas, land that does not meet the criteria for prime farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. In Washington, the criteria for defining and delineating farmland of statewide importance are determined by the Washington State Conservation Commission. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

Ecological Sites

An ecological site is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology that has developed over time, particularly infiltration and runoff; and a characteristic plant community, or kind and amount of vegetation. The hydrology of a site is influenced by the development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available online at <http://www.wa.nrcs.usda.gov/> or at the local office of the Natural Resources Conservation Service.

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forest understory vegetation are closely related to the kind of soil. Effective management is based on the relationship between soils and vegetation and water.

Range management requires knowledge of the kinds of soil and of the historic climax plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the historic climax plant community on a particular rangeland ecological site. The more closely the existing community resembles the historic community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the historic climax plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the "National Range and Pasture Handbook" (<http://www.glti.nrcs.usda.gov/technical/publications/nrph.html>).

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the historic climax plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Areas of rangeland are intermingled with forested areas. The areas of rangeland produce a majority of the forage in the survey area. These areas may occur as separate detailed soil map units or as complexes with timbered areas, depending on their size.

Many acres of woodland in the survey area are grazeable by livestock. Most of this land is grazed by cattle or has been grazed by sheep and cattle. Generally, the primary use of the woodland is the production of wood fiber and the secondary use is grazing. The forest understory provides forage for wildlife and livestock. Unlike rangeland that supports dominantly grasslike plants, the woodland understory consists of dominantly shrubby plants and broadleaf succulent plants as well as young trees. Grasslike plants in the areas of woodland, although less abundant than the shrubby and broadleaf species, also provide a significant amount of forage for livestock.

Forestry activities have a greater impact on the production and composition of woodland understory than do grazing activities. During the early period of settlement, grass production was high, shrubs were sparse, and fast-moving ground fires were common. Heavily barked trees were relatively undamaged by these fires. As practices were implemented to control fires, brush replaced much of the grass and shade-tolerant trees gained a foothold. As the canopy closed, livestock forage decreased dramatically. Commonly, the number of livestock was not adjusted to this decrease in forage and overgrazing resulted.

Silvicultural practices, such as harvesting of shelterwood and thinning for commercial production, increase forage production by opening up the canopy. Using managed burns to dispose of slash and controlling plant competition also increase timber and forage production.

Most of the forested soils that are grazed by livestock and wildlife are on south-facing slopes of 0 to 65 percent. Elevation ranges from 1,000 to 5,000 feet. Slope, aspect, elevation, and the climatic and edaphic variations throughout the grazeable woodland affect the understory plant community. The time of year when the forage is ready for grazing varies depending on whether the areas are on south-facing or north-facing slopes and at lower or higher elevations. Generally, forage plants at the lowest elevations have achieved adequate growth for livestock grazing about mid-May and those at the highest elevations are suitable for grazing by mid-July.

Forestland Productivity and Management

By Dennis J. Robinson, state forester, Natural Resources Conservation Service.

Many of the forested soils are considered to have the potential productive capability for at least one commercial tree species and thus are classified as prime forestland soils. Prime forestland is land that has a mean annual incremental growth of at least 85 cubic feet per acre (Cochran, 1979). About 720,000 acres, or about 58 percent, of the survey area are forested. Of the total forested land in the survey area, private owners manage about 319,000 acres, of which 193,000 acres are managed by large corporate entities.

Forestland Ecology and Productivity

Moisture and topography play an important role in determining the characteristics of forests. In this survey area, which consists partly of the Okanogan-Wenatchee National Forest, the vegetation and ecology differ from elsewhere in Eastern Washington. At the lower elevations in the northern and western parts of the survey area, the soils support timber stands of ponderosa pine. In areas that are cooler and receive more moisture, the soils support higher density, mixed stands of Douglas-fir and ponderosa pine.

The east to west transition from areas of low annual precipitation to moist maritime conditions is a major influence on the plant species and plant community distribution. The Cascade Range causes a rainshadow effect that significantly limits the amount of precipitation received in the survey area. The west to east orientation and width of the ridges greatly influence climatic patterns and thus influence distribution of specific overstory species such as Pacific silver fir, mountain hemlock, western hemlock, and western redcedar.

The survey area has eight distinct forest cover types. They consist of species considered to be of more commercial value than those in other cover types. Species of greater commercial value are ponderosa pine, interior Douglas-fir, grand fir, western hemlock, Pacific silver fir, mountain hemlock, subalpine fir, whitebark pine, and coast Douglas-fir. Coast Douglas-fir and Pacific silver fir are at higher elevations near the crest of the Cascade Range and in cooler mountain valleys and drainageways at higher elevations. Minor forest cover types recognized in the survey area consist of species such as mountain hemlock, Engelmann spruce, subalpine fir, whitebark pine, western larch, lodgepole pine, and black cottonwood-willow.

Management Considerations

Interior Douglas-fir and ponderosa pine account for a significant percentage of the available cubic foot volume of commercial sawtimber in the survey area. Other sources of wood volume are true firs, hemlocks, western larch, lodgepole pine, and other minor coniferous and deciduous species. Mortality is a normal but continuous concern and results in a considerable supply of salvable dead sawtimber. The sporadic nature of the mortality or lack of concentrated dead salvable material commonly makes harvesting a majority of this material economically unfeasible. Historic harvesting production of sawn wood products lent it to large-diameter logs and subsequently higher recovery from each log. Product diversification and the changing economy have resulted in a need for smaller diameter logs of both major and minor tree species.

Wildfire has played a significant role in the forests of the survey area, particularly in ponderosa pine stands. Historically, Native Americans would underburn mature ponderosa pine stands to promote the production of forage for horses. Also, archaic logging practices have been instrumental in promoting the growth of pioneer species and conversion of mixed ponderosa pine-Douglas-fir stands to pure, stagnant stands

of Douglas-fir and lodgepole pine. The lack of underburning and stand replacement fires has contributed to a forest health concern. Current harvesting practices and use of genetic tree stock in reforestation have resulted in a return to diverse units of mixed ponderosa pine and Douglas-fir in many of the stands.

Forest health encompasses a variety of concerns, including diseases and damaging insect infestations. Insects and diseases are endemic to the survey area and the extent of damage caused by each varies from year to year. Normally, losses are confined to individual trees scattered across a landscape or forest type. Root rots, such as annosus root rot and armillaria root rot, cause more consistent mortality of individual trees and groups of trees than some other fungus-type diseases. Mistletoe diseases (*Arceuthobium spp.*), generally referred to as dwarf mistletoe diseases, are widespread in the survey area and are a major factor in tree mortality and volume loss. They are specific to individual tree species. The most prevalent are those that affect ponderosa pine, Douglas-fir, western larch, and lodgepole pine. Efforts to control dwarf mistletoe can be costly. Early detection and removal of infected overstory trees can help to protect seedlings and saplings in the understory (USDA, 1971).

Insects can cause mortality of individual trees. If specific climatic conditions or disasters occur, insect populations can increase and affect healthy trees (USDA, 1977). The most damaging insect in the survey area is the mountain pine beetle (*Dendroctonus ponderosae*). This insect attacks lodgepole pine, western white pine, and young stands of ponderosa pine. The Douglas-fir beetle (*Dendroctonus pseudotsugae*), silver fir beetle (*Pseudohylesinus sericeus*) and western pine beetle (*Dendroctonus brevicomis*) have also caused extensive damage to stands of all ages. Recently, outbreaks of the western spruce budworm (*Choristoneura occidentalis*) have caused severe damage to stands of Douglas-fir and other species such as western larch, grand fir, subalpine fir, and Engelmann spruce. The Douglas-fir tussock moth (*Orgyia pseudotsugata*) can cause widespread defoliation in stands of Douglas-fir. Populations of this insect are monitored across the West, as they develop explosively. After a three-year period, however, the populations begin to decline. The balsam woolly aphid (*Adelges piceae*) has become widely established and is highly destructive to Pacific silver fir, subalpine fir, and grand fir.

Forest management in the survey area ranges from little, if any, to use of intensive cultural practices such as fertilization and stand improvement practices such as pre-commercial thinning and pruning. Managers commonly implement these practices according to a preset timetable.

Present stands vary widely in species composition, age, and diameter. The higher value ponderosa pine and Douglas-fir generally have been harvested in stands at lower elevations. This selective harvesting has resulted in a wide disparity in the distribution of Douglas-fir. Also, historic wildfires have resulted in densely stocked stands of lodgepole pine and western larch in many areas. Unless a management program that includes thinning is used, a majority of the densely stocked, stagnant stands will continue to grow slowly and be of less value at maturity.

Soil surveys have become increasingly more important to forestland owners and managers as they seek ways to increase productivity of the forest resource while maintaining soil productivity and health. Climate, elevation, and aspect determine the kinds of trees that can be expected grow on an individual site, especially in mountainous areas. Depth, fertility, texture, and available water capacity of a soil greatly influence tree growth. Knowledge of the properties of various soils is important to the success of forest management practices.

Stand establishment is a concern that affects the production of timber in the survey area. Viable commercial coniferous and hardwood species are in the area (Lillybridge and others, 1995). The most common method of establishment is hand planting of selected seedlings. Natural regeneration, however, does occur where sites have been disturbed and one to several seed trees remain. This method commonly results

in a diverse stand with a strong component of hardwoods becoming established in a coniferous stand. The proportion of undesirable species that become established varies in naturally regenerated stands. Red alder, a hardwood pioneer species of some commercial value, can become established in disturbed areas at lower elevations and can cause establishment concerns for future coniferous forests. Early-season accumulations of ice in young, immature stands can cause damage to top growth of all tree species.

Some soils in the survey area are influenced by serpentine. The overstory vegetation is characterized by stands that have developed under toxic soil conditions. Individual trees may be stunted or deformed. Re-establishing a stand on soils influenced by serpentine is difficult. Seedlings grown from seed sources on similar soils should be used. Planning should include capturing seed from the site prior to harvest. Harvesting seed trees, leaving the best seed source trees on the site, and controlling competition will help to ensure seedling survival and viability.

Doughtiness of the surface layer is a concern. It can be a result of low rainfall, very low available water capacity, and high ambient temperatures during the growing season. These factors alone or in combination can severely impact the survival of newly planted seedlings. They are especially critical in sandy soils and in soils that have a high content of rock fragments. A high content of coarse volcanic ash and cinders near the surface will also cause a high rate of seedling mortality because of the low available water capacity of the soils. Harvesting practices and high-temperature wildfires that remove the protective layer of duff, organic material, or volcanic ash along with persistent winds that dry the soil can also reduce seedling survival. Persistent winds are common on exposed ridge crests and side slopes, constricted areas in wide valleys, and alluvial fans at the head of major drainageways.

Typically, the plant nutrients in soils that formed in glacial outwash or at high elevations are concentrated in the dark-colored layers near the surface. If these layers, which can contain volcanic ash and have a high available water capacity, are disturbed during harvesting or are intensively burned, soil fertility can be seriously reduced.

When wet, fine textured soils or the medium textured surface layer of soils can be subject to compaction and rutting. Compaction reduces the seedling survival rate and the growth rate of the more mature trees by restricting permeability and root development. Compaction can reduce the quality of a site by as much as 10 percent. Rutting may expose tree roots to damage by ground-based harvesting equipment.

A high water table during the growing season can also restrict root growth, which can reduce productivity. Saturated soils that have a high water table can be invaded by undesirable deciduous species. Shallow-rooted species growing on soils that have a high water table are subject to windthrow. Use of wheeled and tracked, ground-based harvesting equipment should be restricted to drier periods.

The main limitation affecting timber harvesting is steepness of slope. Use of ground-based harvesting equipment on slopes of more than 30 percent is generally considered to be unsafe. Cable systems are safer and disturb the surface less.

The underlying material generally plays a more important role in road construction activities than does the upper part of the soil, especially in steep areas. Soil characteristics are especially important in gently sloping areas and poorly drained areas. Glacial outwash, alluvium, and unweathered bedrock provide a stable base for roads. Mass movement associated with slope instability is a concern. Roads built in steep areas underlain by breccia, phyllite, or sandstone or in thick deposits of volcanic ash or cinders are subject to mass movement. In areas where the subsurface parent material has similar slope as the slope of the surface layer, there is a of mass wasting and failure. Material that is cast aside during road construction may slough when saturated. Roads constructed on gently sloping soils that are fine textured or medium textured will require suitable surfacing for year-round use. Roads constructed in poorly

drained areas require a thicker surface base and generally extra culverts. Steep roadcuts constructed in areas of dry outwash are subject to raveling.

Soil erosion on forestland generally is a minor concern. Stands with a long history of harvesting activities may be subject to overland flows and transport of sediment offsite as a result of periods of extreme rain or snow. Forest roads and firebreaks can be a source of sediment, which can cause concerns for water quality and fish passage when associated with bodies of water or stream courses. Rill and gully erosion may occur in areas where harvesting has manipulated or destroyed the surface layer.

Wildlife Habitat

By Timothy P. Dring, Washington State biologist, Natural Resource Conservation Service.

The survey area has a wide variety of habitats for fish and wildlife. These habitats support a diversity of species that are important economically and aesthetically. With the annual rainfall ranging from as little as 6 inches to more than 130 inches and elevation ranging from 475 to more than 6,000 feet, the plant communities include cropland, sparse rangeland, and highly variable coniferous forestland. Much of the land is privately owned, but there are large parcels of Federal, State, and industrial forestland.

Habitats consist of three essential elements—food, cover, and water. These resources need to be sufficient to meet the biological needs of species living within the habitat. Although all three elements must be present in order for a species to be successful, it commonly is the lack of preferred food that limits the size of a terrestrial animal population. A lack of cover and severe weather conditions commonly are secondary limiting factors.

Degradation of riparian habitat along streams and rivers and various forms of water pollution, including an increase in temperature and sediment, are the major limiting factors for fish, such as salmon, and other members of the aquatic community, such as aquatic insects.

Riparian habitat is a transitional community between the aquatic ecosystem and adjacent terrestrial ecosystems. A number of different plant communities can exist as riparian habitat, and the corresponding soils can be distinctly different than those of the adjacent uplands.

Much of the survey area is woodland. The principal conifer species at the lower elevations is ponderosa pine, which forms single species stands. Douglas-fir is mixed with ponderosa pine in stands at higher elevations. Other conifer species included in the plant community as elevation increases are lodgepole pine and western hemlock. Larch and grand fir are included at still higher elevations. Pacific silver fir and mountain hemlock plant communities are at the highest elevations. Deciduous species commonly account for less than 1 percent the total composition of the forests. These species commonly are in moist draws and around springs or seeps. They include willow species, alder species, black cottonwood, redosier dogwood, oceanspray, and aspen. Plant communities that are dominantly Oregon white oak are in the south-central part of the survey area.

One of the greatest woodland resources in Kittitas County is the Wenatchee National Forest. Native cutthroat trout reside in the many mountain streams, and elk, mule deer, snowshoe hare, beaver, and many species of birds live within boundary of the forest. Years of grazing by cattle have damaged wildlife habitat, especially the riparian plant communities. As a result, some species of animals that reside or have resided in the eastern Cascades are threatened or endangered or have been extirpated completely. These include bighorn sheep, which have been reintroduced to the area, gray wolf, marten, lynx, grizzly bear, blue grouse, goshawk, and many species of neotropical birds, whose populations are declining worldwide. Many studies on the effects of resource and recreational use within the Wenatchee National Forest

are being conducted to ensure the continued presence of quality habitat for fish and wildlife species.

The plant communities in areas in the eastern part of the survey area that receive limited amounts of moisture consist dominantly of grasses, forbs, and shrubs. Species of animals that use the shrub-steppe habitat include mule deer, black bear, burrowing owl, sage and sharp-tailed grouse, western meadowlark, loggerhead shrike, long-billed curlew, western rattlesnake, terrestrial garter snake, western skink, Great Basin spadefoot toad, coulee cricket, and Mormon cricket.

Freshwater Lakes

The freshwater lakes and ponds in the survey area provide habitat for both coldwater and warmwater fish. Warmwater species, which are not native to the area, require a water temperature of more than 65 degrees. Warmwater species of game fish in natural waters and manmade reservoirs include bass, bluegill, crappie, perch, and catfish. The principal species of coldwater game fish is rainbow trout.

Management of pastureland and cropland to create, improve, and manage wildlife habitat can be achieved by applying practices that benefit other resources as well. Suitable practices include planting cover crops, reducing the amount of tillage or using no-till farming, developing riparian buffers by planting strips of woody vegetation along shorelines and streambanks, planting wildlife corridors along fencerows or wherever feasible, planning for and applying animal waste and nutrient management systems to prevent pollution of water, using pesticides and chemicals properly, and practicing integrated pest management. These practices not only improve wildlife habitat, but they can also improve water quality and minimize soil erosion caused by wind or water.

Some soils in the area are that are poorly drained or very poorly drained form wetland areas. These are excellent areas for restoring or enhancing the habitat for aquatic or water-dependant species of wildlife. Conservation practices have been established to address the creation, restoration, enhancement, and management of wetland for wildlife native to the survey area.

Upland Woodland and Riparian Management

Appropriate woodland management practices can greatly enhance the abundance of wildlife. Small-scale clearcutting creates a diversity of successional stages in the vegetation and provides food adjacent to areas of cover. Leaving strips of undisturbed vegetation along stream corridors helps to protect spawning gravel and other aquatic habitat from sedimentation; provides shade, which helps to maintain a coldwater temperature; traps undesirable nutrients, herbicides, and pesticides; and provides food and cover for terrestrial species. Standing snags provide habitat for cavity-nesting birds and provide food for other animals, particularly macro-invertebrates.

The needs of fish and wildlife should be considered when logging roads and skid trails are constructed. Seeding burns, roads, skid trails, and other disturbed areas to grasses and legumes helps to stabilize soils, provides food, and reduces the risk of water pollution. Logging practices that help to keep sediment from blocking streams and minimize the risk of erosion should be used.

Urban Areas and Their Relationship to Wildlife

As both urban and rural populations increase, careful planning is needed to preserve as much wildlife habitat as possible. Landscaping can both beautify urban areas and provide habitat. Control of sediment from construction sites is needed to prevent disturbance of adjacent areas and to reduce the risk of water pollution. Proper disposal systems for sewage, storm runoff, pesticides, and other possibly harmful pollutants are also needed. Corridors of riparian vegetation should be maintained,

especially on flood plains. Riparian corridors can reduce the risk of streambank erosion, intercept sediment, buffer the effects of flooding, and provide food and cover for wildlife. Riparian corridors also can be used as recreational sites in urban areas. Trail systems, picnic areas, wildlife viewing areas, and parking lots can be constructed within riparian corridors.

Hydric Soils

[Table 7](#) lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.

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2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0 feet) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1) a water table at the surface (0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
 - 2) a water table at a depth of 0.5 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 6 inches per hour in all layers within a depth of 20 inches, or
 - 3) a water table at a depth of 1.0 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 6 inches per hour in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Soil Properties

[Table 8](#) gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages

are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Soil Properties

Table 9 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (K_{sat}), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $1/3$ - or $1/10$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (K_{sat}) refers to the ability of a soil to transmit water or air. The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (K_{sat}) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water

per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (K_{sat}). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Soil Properties

Table 10 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity (CEC) is the total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil. It commonly is measured at neutral pH of 7.0 (CEC-7), but it may be measured at some other stated pH value. Soils that have a low CEC hold fewer cations and may require more frequent applications of fertilizer than those that have a high CEC. The ability to retain cations minimizes the risk of ground-water pollution.

Effective cation-exchange capacity (ECEC) refers to the sum of exchangeable cations plus aluminum, expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have natural pH of less than or equal to 5.5 and is a measure of the CEC at the natural pH. In soils with low pH, the ECEC more accurately reflects the actual CEC of the soils. Although CEC-7 is not actually present in these soils under natural conditions, the ECEC reflects the potential CEC if the soils are limed and the pH increased to neutral.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste.

It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

Table 11 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and

very frequent that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 12 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

[Table 13](#) indicates the order, suborder, great group, subgroup, and family of the taxonomic units in the survey area.

Taxonomic Units and Their Morphology

In this section, each taxonomic unit recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each unit. A pedon, a small three-dimensional area of soil, that is typical of the unit in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993) and in the "Field Book for Describing and Sampling Soils" (Schoeneberger and others, 2002). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2003). Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the taxonomic unit.

Ackna Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces and alluvial fans

Parent material: Alluvium and loess with an influence of volcanic ash

Slope range: 0 to 5 percent

Elevation: 1,400 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitritorrandic Argixerolls

Typical pedon of Ackna ashy loam, 0 to 2 percent slopes, about 2.5 miles west of Ellensburg, Washington; about 2,100 feet west and 1,900 feet south of the northeast corner of section 32, T. 18 N., R. 18 E.; Ellensburg North, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 0 minutes 33 seconds north and longitude 120 degrees 36 minutes 40 seconds west; NAD 83.

Ap—0 to 8 inches; brown (10YR 4/3) ashy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and few medium roots; many very fine irregular pores; 5 percent gravel; neutral (pH 6.9); abrupt smooth boundary.

A—8 to 18 inches; brown (10YR 4/3) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; hard, friable, slightly sticky and slightly plastic; many very fine and few medium roots; many very fine irregular pores and common very fine and few fine tubular pores; 5 percent gravel; neutral (pH 6.9); clear wavy boundary.

2BA_t—18 to 28 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine roots; many very fine irregular pores and many very fine and few fine tubular pores; few faint pressure faces on peds and few faint clay bridges in pores; 10 percent gravel; 25 percent very coarse cylindrical cicada casts; neutral (pH 7.0); clear wavy boundary.

3B_t1—28 to 42 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common very fine tubular pores; few faint pressure faces on peds, common faint clay bridges in pores, and common distinct

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clay films on rock fragments; 45 percent gravel, 15 percent cobbles, and 5 percent stones; neutral (pH 7.0); clear wavy boundary.

3Bt2—42 to 55 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine irregular pores; common distinct clay films on rock fragments and common faint clay bridges on sand grains; 40 percent gravel, 20 percent cobbles, and 5 percent stones; neutral (pH 6.9); clear wavy boundary.

4C—55 to 60 inches; yellowish brown (10YR 5/4) extremely gravelly loamy sand, brown (10YR 4/3) moist; single grain; loose; pockets of extremely gravelly coarse sand; 45 percent gravel, 20 percent cobbles, and 10 percent stones; neutral (pH 6.9).

Thickness of mollic epipedon: 25 to 35 inches

Thickness of volcanic ash influence: 15 to 23 inches

Depth to 4C horizon: 40 to 60 inches

Particle-size control section: 17 to 30 percent clay and 60 to 85 percent rock fragments

Ap horizon:

Value—3 or 4 dry

Chroma—2 or 3 dry

Content of clay—18 to 25 percent

Reaction—slightly acid or neutral

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or ashy silt loam

Content of clay—18 to 25 percent

2BA_t horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—25 to 27 percent

3B_t horizon:

Value—4 or 5 dry

Chroma—3 or 4 dry

Texture—extremely gravelly clay loam, extremely gravelly loam, or extremely gravelly sandy clay loam in the upper part and extremely gravelly clay loam, extremely gravelly sandy clay loam, or extremely gravelly sandy loam in the lower part

Content of clay—17 to 30 percent

Reaction—slightly alkaline or moderately alkaline

4C horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry

Texture—extremely gravelly loamy sand, extremely gravelly sand, or extremely gravelly coarse sand

Content of clay—0 to 10 percent

Ainsley Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

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Parent material: Colluvium and residuum derived from andesite, basalt, and pyroclastic rock with a mantle of volcanic ash

Slope range: 5 to 60 percent

Elevation: 3,800 to 5,100 feet

Mean annual precipitation: 50 to 70 percent

Mean annual air temperature: 42 to 44 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Clayey-skeletal, isotic Andic Haplocryalfs

Typical pedon of Ainsley stony ashy sandy loam in Kittitas County, Washington, about 11 miles south of Cle Elum; about 1,480 feet north and 700 feet east of the southwest corner of section 22, T. 18 N., R. 15 E.; Frost Mountain, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 1 minute 51 seconds north and longitude 120 degrees 57 minutes 30 seconds west; NAD 83.

Oe—0 to 1 inch; moderately decomposed forest litter; abrupt smooth boundary.

A1—1 to 3 inches; light brownish gray (10YR 6/2) stony ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; 20 percent gravel and 10 percent stones; moderately acid (pH 5.6); abrupt wavy boundary.

A2—3 to 8 inches; yellowish brown (10YR 5/4) gravelly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic, weakly smeary; common fine and few medium roots; 20 percent gravel; NaF pH 10.0; moderately acid (pH 5.6); clear wavy boundary.

AB—8 to 23 inches; yellowish brown (10YR 5/4) very cobbly ashy loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; 25 percent gravel and 30 percent cobbles; NaF pH 9.6; moderately acid (pH 5.6); gradual wavy boundary.

2Bt1—23 to 35 inches; yellowish brown (10YR 5/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; common distinct clay films on faces of peds; 40 percent gravel and 30 percent cobbles; moderately acid (pH 5.8); clear smooth boundary.

2Bt2—35 to 60 inches; brown (10YR 5/3) extremely cobbly clay loam, dark brown (10YR 3/3) moist; strong medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few fine irregular pores; many prominent clay films on faces of peds; 35 percent gravel and 35 percent cobbles; moderately acid (pH 5.8).

Thickness of volcanic ash influence: 1 to 23 inches

Particle-size control section: 35 to 50 percent clay and 35 to 70 percent rock fragments

A1 horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—stony ashy loam

Content of clay—8 to 12 percent

Reaction—moderately acid or slightly acid

A2 horizon:

Chroma—3 or 4 dry or moist

Content of clay—8 to 12 percent

Reaction—moderately acid or slightly acid

AB horizon:

Texture—very cobbly ashy loam or extremely cobbly ashy loam
Content of clay—20 to 25 percent

Bt1 horizon:

Value—5 or 6 dry, 3 or 4 moist
Texture—extremely cobbly clay loam or very cobbly clay loam
Content of clay—35 to 40 percent
Reaction—moderately acid or slightly acid

Bt2 horizon:

Chroma—3 or 4 moist
Texture—extremely cobbly clay loam, very cobbly clay loam, or extremely cobbly clay
Content of clay—35 to 50 percent
Reaction—moderately acid or slightly acid

Ampad Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Cuestas and backslopes of mountains

Parent material: Residuum and colluvium derived from sandstone with an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Elevation: 2,100 to 4,900 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 days

Frost-free period: 80 to 110 days

Taxonomic classification: Coarse-loamy, isotic, frigid Vitrandic Dystroxerepts

Typical pedon of Ampad ashy sandy loam on a 60-percent, concave, southwest-facing slope in Kittitas County, Washington, about 8 miles north of Cle Elum and 4 miles west on Lick Creek Road; 1,600 feet south and 900 feet west of the northeast corner of section 14, T. 21 N., R. 15 E.; latitude 47 degrees 18 minutes 48 seconds north and longitude 120 degrees 55 minutes 4 seconds west; NAD 83.

Oi—0 to 1 inch; partially decomposed needles and twigs.

A—1 to 5 inches; brown (10YR 5/3) ashy sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine pores; slightly acid (pH 6.2); abrupt smooth boundary.

AB—5 to 10 inches; yellowish brown (10YR 5/4) ashy sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; few very fine irregular pores; 5 percent sandstone paragravel; moderately acid (pH 6.0); clear wavy boundary.

Bw1—10 to 16 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and fine roots; few very fine irregular pores; 5 percent sandstone paragravel; moderately acid (pH 5.8); clear wavy boundary.

Bw2—16 to 29 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and few medium and coarse roots; few very fine irregular pores; 5 percent sandstone paragravel; moderately acid (pH 5.8); clear wavy boundary.

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BC—29 to 33 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; common fine and medium roots; few very fine irregular pores; 10 percent sandstone paragravel; moderately acid (pH 5.6); clear wavy boundary.
Cr—33 inches; weathered sandstone.

Thickness of volcanic ash influence: 7 to 10 inches

Depth to paralithic contact: 20 to 40 inches

Particle-size control section: 5 to 10 percent clay and 0 to 13 percent pararock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 moist

Content of clay—5 to 10 percent

AB horizon:

Content of clay—5 to 10 percent

Reaction—slightly acid or moderately acid

Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 moist or dry

Content of clay—5 to 10 percent

BC horizon:

Texture—sandy loam or loamy sand

Content of clay—5 to 10 percent

Anatone Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Summits, shoulders, and backslopes of mountains and plateaus

Parent material: Residuum and colluvium derived from basalt, andesite, and welded tuff mixed with loess and volcanic ash in the upper part

Slope range: 5 to 25 percent

Elevation: 2,000 to 5,500 feet

Mean annual precipitation: 16 to 35 inches

Mean annual air temperature: 40 to 45 degrees F

Frost-free period: 60 to 120 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, frigid Lithic Haploxerolls

Typical pedon of Anatone very cobbly loam in Kittitas County, Washington, about 13 miles northeast of Ellensburg; 2,028 feet east and 1,580 feet south of the northwest corner of section 1, T. 19 N., R. 20 E., latitude 47 degrees 10 minutes 16 seconds north and longitude 120 degrees 16 minutes 21 seconds west; NAD 83.

A—0 to 3 inches; reddish brown (5YR 4/4) very cobbly loam, dark reddish brown (5YR 3/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many roots; 20 percent gravel and 30 percent cobbles; neutral (pH 6.6); clear wavy boundary.

Bw1—3 to 10 inches; reddish brown (5YR 4/4) very cobbly loam, dark reddish brown (5YR 3/3) moist; weak medium subangular blocky structure; hard, friable, slightly

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sticky and slightly plastic; common roots; few very fine pores; 25 percent gravel and 30 percent cobbles; slightly acid (pH 6.5); abrupt wavy boundary.
Bw2—10 to 14 inches; reddish brown (5YR 4/4) extremely gravelly loam, dark reddish brown (5YR 3/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common roots; few very fine pores; coatings on some surface of peds; 40 percent gravel, 20 percent cobbles, and 5 percent stones; slightly acid (pH 6.5); abrupt irregular boundary.
R—14 inches; basalt.

Thickness of mollic epipedon: 10 to 20 inches

Depth to bedrock: 10 to 20 inches

Particle-size control section: Averages 18 to 30 percent clay and 35 to 85 percent rock fragments

Reaction: Neutral or slightly acid throughout

A horizon:

Hue—10YR or 5YR

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 to 4 dry, 1 to 3 moist

Content of clay—16 to 23 percent

Bw1 horizon:

Hue—10YR, 7.5YR, 5YR, or 2.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 to 4 dry, 2 or 3 moist

Texture—very cobbly loam or very gravelly loam

Content of clay—18 to 27 percent

Bw2 horizon:

Hue—10YR, 7.5YR, 5YR, or 2.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 to 4 dry, 2 or 3 moist

Texture—extremely gravelly loam, very gravelly loam, or extremely cobbly loam

Content of clay—18 to 27 percent

Andic Dystrocryepts

Depth class: Moderately deep to very deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains and upper side slopes of glacial valleys

Parent material: Residuum and colluvium derived from basalt, andesite, phyllite, and sandstone with volcanic ash in the upper part

Slope range: 30 to 90 percent

Elevation: 2,300 to 7,000 feet

Mean annual precipitation: 40 to 120 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Andic Dystrocryepts

Typical pedon of Andic Dystrocryepts stony ashy sandy loam in Kittitas County, Washington, about 1.5 miles northwest of Little Joe Lake; 250 feet west and 1,500 feet south of the northeast corner of section 15, T. 22 N., R. 13 E., latitude 47 degrees 24 minutes 1 second north and longitude 121 degrees 11 minutes 25 seconds west.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) stony ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine roots; many very fine irregular pores; 3 percent gravel, 15 percent cobbles, and 10 percent stones; strongly acid (pH 5.2); abrupt wavy boundary.

A2—5 to 11 inches; brown (10YR 5/3) very cobbly ashy sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; many very fine and fine roots; many very fine irregular pores; 20 percent gravel, 25 percent cobbles, and 5 percent stones; strongly acid (pH 5.4); clear wavy boundary.

2Bw—11 to 26 inches; very pale brown (10YR 7/3) extremely cobbly sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; 30 percent gravel, 35 percent cobbles, and 5 percent stones; strongly acid (pH 5.4); abrupt wavy boundary.

2R—26 inches; quartz sandstone.

Thickness of umbric epipedon: 7 to 13 inches

Thickness of volcanic ash influence: 0 to 11 inches

Depth to bedrock: 20 to 60 inches or more

Particle-size control section: 5 to 10 percent clay and 35 to 75 percent rock fragments

Reaction: Strongly acid throughout

A1 horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—stony ashy sandy loam or very gravelly ashy sandy loam

Content of clay—5 to 10 percent

A2 horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly ashy sandy loam or very cobbly ashy sandy loam

Content of clay—5 to 10 percent

2Bw horizon:

Hue—10YR, 2.5Y, or 7.5YR

Value—5 to 7 dry, 4 to 6 moist

Chroma—3 or 4 dry or moist

Texture—extremely cobbly sandy loam, extremely cobbly loam, or extremely gravelly sandy loam

Content of clay—5 to 10 percent

Andic Dystroxerepts

Depth class: Moderately deep and deep

Drainage class: Well drained

Position on landscape: Backslopes and shoulders of mountains

Parent material: Residuum and colluvium derived from basalt mixed with volcanic ash in the upper part

Slope range: 40 to 70 percent

Elevation: 3,000 to 6,300 feet

Mean annual precipitation: 35 to 60 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 70 to 100 days

Taxonomic classification: Andic Dystroxerepts

Typical pedon of Andic Dystroxerepts very cobbly ashy sandy loam in an area of Andic Dystroxerepts-Rock outcrop complex, 40 to 70 percent slopes, stony, in Kittitas County, Washington; about 2,640 feet east and 2,244 feet south of the northwest corner of section 25, R. 15 E., T. 22 N., latitude 47 degrees 29 minutes 52 seconds north and longitude 120 degrees 54 minutes 26 seconds west.

Oi—0 to 1 inch; slightly decomposed forest litter; abrupt smooth boundary.

A—1 to 14 inches; brown (10YR 4/3) very cobbly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and many medium roots; few very fine tubular pores; 20 percent gravel, 20 percent cobbles, and 0.1 percent surface stones; neutral (pH 6.6); abrupt wavy boundary.

Bw1—14 to 17 inches; yellowish brown (10YR 5/4) extremely cobbly ashy loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, and medium roots; very few fine tubular pores; 30 percent gravel and 30 percent cobbles; neutral (pH 6.6); clear wavy boundary.

2Bw2—17 to 33 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; nonsticky and nonplastic; few very fine roots in cracks; few fine irregular pores; 40 percent gravel and 50 percent cobbles; slightly acid (pH 6.2); abrupt irregular boundary.

2R—33 inches; Teanaway basalt.

Thickness of volcanic ash influence: 1 to 17 inches

Thickness of andic properties: 1 to 13 inches

Depth to bedrock: 20 to 60 inches

Particle-size control section: Averages 5 to 15 percent clay and 35 to 90 percent rock fragments

A horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—1 to 3 dry or moist

Content of clay—5 to 10 percent

Reaction—moderately acid to neutral

Bw horizon:

Value—4 or 6 dry, 3 or 4 moist

Chroma—4 or 5 dry, 3 or 4 moist

Texture—extremely cobbly ashy loam or extremely cobbly ashy sandy loam

Content of clay—5 to 15 percent

Reaction—slightly acid or moderately acid

2Bw horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—4 or 5 dry, 3 or 4 moist

Texture—extremely cobbly loam or extremely cobbly sandy loam

Content of clay—5 to 15 percent

Reaction—slightly acid or moderately acid

Andic Haplocryods

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains and glacial valleys

Parent material: Colluvium derived from mixed rock sources with a mantle of volcanic ash

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Slope range: 30 to 90 percent

Elevation: 2,300 to 6,400 feet

Mean annual precipitation: 80 to 120 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Andic Haplocryods

Typical pedon of Andic Haplocryods cobbly ashy sandy loam in Kittitas County, Washington, about 1.2 miles east of Rachel Lake; 2,415 feet west and 400 feet south of the northeast corner of section 11, T. 22 N., R. 12 E., latitude 47 degrees 25 minutes 12.6 seconds north and longitude 121 degrees 18 minutes 17.8 seconds west.

Oe—0 to 2 inches; moderately decomposed forest litter; abrupt wavy boundary.

E—2 to 4 inches; dark grayish brown (10YR 4/2) cobbly ashy sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; few fine tubular pores; 10 percent gravel and 10 percent cobbles; NaF pH 10.5, moderately acid; abrupt wavy boundary.

Bs1—4 to 8 inches; brown (7.5YR 5/4) gravelly medial loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; common fine and very fine tubular pores; 15 percent gravel; strongly acid; clear wavy boundary.

Bs2—8 to 14 inches; brown (7.5YR 5/4) gravelly medial loam, strong brown (7.5YR 4/6) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common medium and few very fine and fine roots; few very fine irregular pores; 25 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.

Bw—14 to 24 inches; light yellowish brown (10YR 6/4) very cobbly medial loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine and medium roots; common very fine irregular pores; 10 percent gravel and 40 percent cobbles; moderately acid; clear smooth boundary.

BC—24 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loam, yellowish brown (10YR 5/4) moist; moderate very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine roots; common very fine irregular pores; 25 percent gravel and 25 percent cobbles; moderately acid.

Thickness of volcanic ash influence: 2 to 24 inches

Thickness of spodic horizon: 4 to 14 inches

Depth to bedrock: 40 to 60 inches or more

Particle-size control section: Clay and rock fragments

Reaction: Strongly acid or moderately acid throughout

E horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—5 to 10 percent

Bs horizon:

Hue—7.5YR or 5YR

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 to 6 dry or moist

Texture—gravelly medial loam, very cobbly medial loam, or very gravelly medial sandy loam

Content of clay—5 to 15 percent

Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 to 6 moist

Chroma—3 to 6 dry or moist

Texture—very cobbly medial loam, extremely gravelly medial sandy loam, or extremely cobbly medial sandy loam

Content of clay—5 to 15 percent

BC horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly loam, extremely cobbly sandy loam, or extremely gravelly sandy loam

Content of clay—5 to 15 percent

Andic Humicryods

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Cirques and mountain slopes

Parent material: Colluvium derived from mixed rock sources mixed with volcanic ash

Slope range: 30 to 90 percent

Elevation: 3,000 to 6,400 feet

Mean annual precipitation: 85 to 130 inches

Mean annual air temperature: 35 to 39 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Andic Humicryods

Typical pedon of Andic Humicryods in Kittitas County, Washington, about 1.5 miles east of Rachel Lake; 864 feet west and 1,470 feet south of the northeast corner of section 11, T. 22 N., R. 12 E., latitude 47 degrees 25 minutes 2.6 seconds north and longitude 121 degrees 17 minutes 55.2 seconds west.

Oe—0 to 2 inch; moderately decomposed organic litter; common fine, medium, and coarse roots; abrupt smooth boundary.

E—2 to 5 inches; very dark gray (10YR 3/1) very cobbly ashy sandy loam, gray (10YR 5/1) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine, fine, and medium roots; 10 percent gravel and 25 percent cobbles; very strongly acid (pH 5.0); abrupt smooth boundary.

Bhs—5 to 11 inches; dusky red (2.5YR 3/2) cobbly medial loam, dark reddish brown (5YR 3/4) dry; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; many very fine, fine, and medium and common coarse roots; 15 percent gravel and 10 percent cobbles; very strongly acid (pH 4.9); clear irregular boundary.

Bs1—11 to 18 inches; dark reddish brown (2.5YR 3/4) cobbly medial loam, dark brown (7.5YR 3/4) dry; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; many very fine, fine, and medium and common coarse roots; 10 percent gravel and 20 percent cobbles; very strongly acid (pH 5.0); clear irregular boundary.

Bs2—18 to 24 inches; dark reddish brown (5YR 3/4) very cobbly medial loam, brown (7.5YR 4/4) dry; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; common very fine and many

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fine and medium roots; 20 percent gravel and 20 percent cobbles; strongly acid (pH 5.2); clear irregular boundary.

2BC—24 to 37 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, light yellowish brown (10YR 6/4) dry; massive; soft, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; 35 percent gravel, 35 percent cobbles, and 5 percent stones; strongly acid (pH 5.4); clear smooth boundary.

2R—37 inches; fractured andesite.

Thickness of volcanic ash influence: 2 to 24 inches

Depth to bedrock: 20 to 60 inches or more

Particle-size control section: 5 to 15 percent clay and 20 to 80 percent rock fragments

E horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 2 to 4 moist

Chroma—1 or 2 dry or moist

Content of clay—5 to 10 percent

Bhs horizon:

Hue—10YR, 7.5YR, 5YR, or 2.5YR

Value—3 to 5 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—cobbly medial loam, very cobbly medial loam, or very cobbly medial sandy loam

Content of clay—5 to 15 percent

Bs horizon:

Hue—10YR, 7.5YR, or 5YR

Value—3 to 6 dry, 3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—cobbly medial loam, very cobbly medial loam, or very cobbly medial sandy loam

Content of clay—5 to 15 percent

Reaction—strongly acid or moderately acid

2BC horizon:

Hue—10YR, 7.5YR, or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—4 to 6 dry or moist

Texture—extremely cobbly loam or extremely cobbly sandy loam

Content of clay—5 to 15 percent

Reaction—strongly acid or moderately acid

Aquolls

Depth class: Very deep

Drainage class: Poorly drained

Position on landscape: Flood plains

Parent material: Alluvium

Slope range: 0 to 5 percent

Elevation: 500 to 2,500 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 130 to 195 days

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Taxonomic classification: Aquolls

Typical pedon of Aquolls cobbly fine sandy loam in Kittitas County, Washington, about 10.5 miles southwest of Vantage; 2,900 feet south and 700 feet west of the northeast corner of section 4, T. 16 N., R. 21 E., latitude 46 degrees 54 minutes 17 seconds north and longitude 120 degrees 11 minutes 40 seconds west.

A—0 to 5 inches; grayish brown (10YR 5/2) cobbly fine sandy loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine interstitial and common very fine tubular pores; few fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; 15 percent gravel and 10 percent cobbles; neutral (pH 6.8); clear wavy boundary.

BA—5 to 12 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine interstitial and common very fine tubular pores; few fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; 15 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

2Bg—12 to 18 inches; grayish brown (10YR 5/2) extremely gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine and medium roots; common fine and medium interstitial and common very fine tubular pores; few fine distinct dark yellowish brown (10YR 4/6) redoximorphic concentrations; 45 percent gravel and 20 percent cobbles; slightly alkaline (pH 7.6); clear wavy boundary.

3C—18 to 60 inches; grayish brown (10YR 5/2) extremely gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few fine roots; common fine distinct dark yellowish brown (10YR 4/6) iron stains on gravel and sand; 50 percent gravel, 15 percent cobbles, and 5 percent stones; slightly alkaline (pH 7.8).

Thickness of mollic epipedon: 40 to 60 inches

Water table—present year round

Particle-size control section: Averages 0 to 10 percent clay and 15 to 70 percent rock fragments

Reaction: Neutral to moderately alkaline throughout

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Content of clay—5 to 15 percent

BA horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—gravelly sandy loam, very cobbly loam, or very gravelly sandy loam

Content of clay—5 to 15 percent

2Bg horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—extremely gravelly sandy loam, very gravelly sandy loam, or gravelly loam

Content of clay—5 to 15 percent

3C horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—extremely gravelly loamy sand, extremely gravelly sand, or very gravelly loamy sand

Content of clay—0 to 5 percent

Argabak Series

Depth class: Very shallow

Drainage class: Well drained

Position on landscape: Hillslopes and structural benches

Parent material: Loess mixed with residuum derived from basalt

Slope range: 3 to 30 percent

Elevation: 1,200 to 4,200 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 46 to 50 degrees

Frost-free period: 120 to 170 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Argixerolls

Typical pedon of Argabak very cobbly loam in Kittitas County, Washington, about 9 miles south of Kittitas; 300 feet south and 2,200 feet east of northwest corner of section 29, T. 16 N., R. 20 E.; Badger Gap, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 51 minutes 7 seconds north and longitude 120 degrees 21 minutes 2 seconds west.

A—0 to 2 inches; yellowish brown (10YR 5/4) very cobbly loam, very dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; 25 percent gravel and 25 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

Bt—2 to 6 inches; dark brown (10YR 4/3) extremely gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; common distinct clay films on faces of peds; 50 percent gravel and 20 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

R—6 inches; fractured basalt; silica coatings on 30 percent of total surface area.

Thickness of mollic epipedon: 5 to 7 inches

Depth to bedrock: 5 to 12 inches

Particle-size control section: 23 to 33 percent clay and 35 to 75 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Value—3 to 5 dry or moist

Chroma—2 to 4 dry or moist

Content of clay—15 to 20 percent

Bt horizon:

Value—3 to 5 dry

Chroma—2 to 4 dry or moist

Texture—extremely gravelly loam, very gravelly clay loam, or very cobbly loam

Content of clay—23 to 33 percent

Argixerolls

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terrace escarpments and hillslopes

Parent material: Loess and alluvium

Slope range: 15 to 70 percent

Elevation: 1,400 to 3,300 feet

Mean annual precipitation: 9 to 16 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Argixerolls

Typical pedon of Argixerolls ashy loam in Kittitas County, Washington; about 1,800 feet west and 350 feet north of the southeast corner of section 6, T. 18 N., R. 18 E., latitude 47 degrees 4 minutes 24 seconds north and longitude 120 degrees 37 minutes 54 seconds west.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) ashy loam, black (10YR 2/1) moist; weak medium platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular roots; neutral (pH 7.2); clear wavy boundary.

A2—4 to 12 inches; dark grayish brown (10YR 4/2) loam, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular and few very fine irregular pores; few faint clay films lining pores and on faces of peds; 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt1—12 to 28 inches; brown (10YR 4/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; common fine and few coarse roots; common very fine tubular and irregular pores; common distinct clay films lining pores and on faces of peds; 20 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt2—28 to 42 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; common fine and few coarse roots; many very fine irregular and few very fine tubular pores; many prominent clay films lining pores and on faces of peds; 20 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt3—42 to 60 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; few medium and coarse roots; many very fine irregular and few very fine tubular pores; many prominent clay films lining pores and on faces of peds; 20 percent gravel; neutral (pH 7.0).

Thickness of mollic epipedon: 15 to 60 inches

Thickness of volcanic ash influence: 0 to 4 inches

Particle-size control section: 27 to 60 percent clay and 15 to 65 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam, loam, cobbly loam, cobbly clay loam, or silt loam

Content of clay—15 to 27 percent

Reaction—neutral or slightly acid

Bt horizon:

Value—4 or 5 dry, 2 to 4 moist

Chroma—1 to 3 dry or moist

Texture—clay loam, gravelly clay loam, or silty clay loam in the upper part and very gravelly clay loam, very gravelly sandy clay loam, gravelly clay, extremely gravelly sandy clay loam, or gravelly clay loam in the lower part

Content of clay—27 to 60 percent

Reaction—slightly alkaline to slightly acid

Bearrun Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Toeslopes and footslopes of mountains

Parent material: Colluvium derived from basalt and bentonite with an influence of volcanic ash in the upper part

Slope range: 10 to 40 percent

Elevation: 3,200 to 5,600 feet

Mean annual precipitation: 30 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Taxonomic classification: Fine, mixed, active, frigid Vitrandic Palexeralfs

Typical pedon of Bearrun ashy sandy loam in Wenatchee National Forest, Yakima County, Washington, about 8 miles west of the community of Nile; about 2,600 feet east and 100 feet north of the southwest corner of section 16, T. 15 N., R. 14 E.; latitude 46 degrees 57 minutes 30 seconds north and longitude 121 degrees 6 minutes 46 seconds west.

Oi—0 to 1 inch; slightly decomposed forest litter mixed with a small amount of 1980 Mount St. Helens ash; abrupt smooth boundary.

A—1 to 7 inches; brown (10YR 5/3) ashy sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine irregular pores; moderately acid (pH 5.6); NaF pH 8.8; clear smooth boundary.

2Bw1—7 to 14 inches; pale brown (10YR 6/3) ashy loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine and medium, and few coarse roots; common very fine and fine irregular and few fine tubular pores; moderately acid (pH 5.7); NaF 8.6; clear smooth boundary.

2Bw2—14 to 23 inches; pale brown (10YR 6/3) ashy loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common fine irregular and tubular pores; 5 percent gravel; moderately acid (pH 6.0); NaF 8.7; abrupt wavy boundary.

3Bt1—23 to 33 inches; pale brown (10YR 6/3) clay, grayish brown (2.5Y 5/2) moist; strong medium prismatic structure parting to strong medium subangular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine and medium tubular pores; common prominent very dark grayish brown (10YR 3/2) clay films lining pores and on faces of peds; 5 percent gravel and 5 percent cobbles; moderately acid (pH 5.8); NaF pH 8.5; gradual smooth boundary.

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3Bt2—33 to 45 inches; light gray (10YR 7/2) clay, grayish brown (2.5Y 5/2) moist; strong medium and coarse prismatic structure parting to strong medium subangular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine and medium tubular pores; common prominent olive brown (2.5Y 4/4) clay films lining pores and on faces of peds; 5 percent gravel and 5 percent cobbles; moderately acid (pH 5.9); gradual smooth boundary.

3Bt3—45 to 55 inches; light yellowish brown (10YR 6/4) gravelly clay loam, brown (10YR 5/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few fine and medium roots; common fine irregular and few fine tubular pores; common distinct brown (10YR 4/3) clay films lining pores and on faces of peds; 15 percent gravel and 5 percent cobbles; moderately acid (pH 6.0); clear smooth boundary.

3Bt4—55 to 61 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, light olive brown (2.5Y 5/4) moist; moderate coarse prismatic structure parting to moderate coarse and medium subangular blocky; hard, friable, moderately sticky and moderately plastic; common very fine and fine irregular pores; common distinct dark yellowish brown (10YR 3/4) clay films lining pores and on faces of peds; 35 percent gravel and 15 percent cobbles; moderately acid (pH 6.0).

Thickness of volcanic ash influence: 7 to 23 inches

Depth to abrupt textural change: 10 to 23 inches

Particle-size control section: 35 to 60 percent clay and 5 to 25 percent rock fragments

A horizon:

Chroma—2 to 3 dry or moist

Content of clay—4 to 8 percent

Reaction—moderately acid or slightly acid throughout

2Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Texture—ashy loam or gravelly ashy clay loam

Content of clay—10 to 30 percent

3Bt horizon:

Hue—10YR or 2.5Y

Value—4 to 7 dry, 4 or 5 moist

Chroma—2 to 4 dry or moist

Texture—clay, silty clay, or clay loam in the upper part and gravelly clay, gravelly clay loam, or ranging to very gravelly clay loam in the lower part

Content of clay—30 to 70 percent

3Bt4 horizon (where present):

Content of rock fragments—may range to more than 35 percent

Bedron Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Interbedded sediment, colluvium, and loess mixed with volcanic ash

Slope range: 15 to 45 percent

Elevation: 2,000 to 3,600 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 49 degrees F

Frost-free period: 110 to 135 days

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Taxonomic classification: Fine, smectitic, mesic Vitrandic Argixerolls

Typical pedon of Bedron ashy loam in Kittitas County, Washington, about 8 miles south of Ellensburg; about 100 feet east and 150 feet north of the southwest corner of section 15, T. 16 N., R. 18 E.; The Cottonwoods, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 52 minutes 11 seconds north and longitude 120 degrees 34 minutes 13 seconds west.

A1—0 to 8 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate fine, medium, and very coarse granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few coarse roots; many very fine irregular and tubular pores; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

A2—8 to 13 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine tubular and irregular pores; 5 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

2Bt1—13 to 19 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; common very fine and few coarse roots; many very fine tubular and irregular pores; many distinct pressure faces on peds; few distinct clay films and common distinct clay bridges in pores and common distinct clay films on vertical faces of prisms; 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

2Bt2—19 to 27 inches; brown (10YR 3/3) clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky structure; very hard, firm, sticky and plastic; common very fine and few medium roots; common very fine tubular pores; many distinct pressure faces on peds, few distinct clay films and common distinct clay bridges in pores, and common distinct clay films on vertical faces of prisms; 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

2Bt3—27 to 60 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm, sticky and plastic; common very fine and few medium roots; common very fine tubular pores; many distinct pressure faces on peds, few distinct clay films and common clay bridges in pores, and common distinct clay films on vertical faces of prisms; 25 percent gravel and 10 percent cobbles; neutral (pH 7.0).

Thickness of mollic epipedon: 25 to 40 inches

Thickness of volcanic ash influence: 7 to 20 inches

Particle-size control section: 30 to 40 percent clay and 5 to 30 percent rock fragments

Reaction: Neutral throughout

A horizon:

Value—3 or 4 dry, 1 to 3 moist

Content of clay—15 to 20 percent

2Bt1 horizon:

Hue—10YR or 7.5YR

Chroma—2 or 3 dry or moist

Texture—clay loam or gravelly clay loam

Content of clay—35 to 40 percent

2Bt2 and 2Bt3 horizons:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Texture of 2Bt2 horizon—clay loam, gravelly clay loam, or very gravelly clay loam

Texture of 2Bt3 horizon—gravelly clay loam or very gravelly clay loam

Content of clay—35 to 40 percent

Benwy Series

Depth class: Deep

Drainage class: Well drained

Position on landscape: Structural benches, hillslopes, footslopes, and toeslopes

Parent material: Loess, alluvium, and colluvium over a duripan

Slope range: 2 to 45 percent

Elevation: 1,200 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Calciargidic
Argixerolls

Typical pedon of Benwy silt loam in Kittitas County, Washington, about 13 miles southeast of Kittitas off the old Milwaukee Railroad line; 1,600 feet south and 1,600 feet east of the northwest corner of section 14, T. 16 N., R. 21 E.; latitude 46 degrees 52 minutes 36 seconds north and longitude 120 degrees 9 minutes 36 seconds west; NAD 83.

A—0 to 10 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; 5 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

AB—10 to 18 inches; brown (10YR 5/3) silt loam, very dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; many very fine roots; common very fine tubular pores; 10 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt—18 to 33 inches; yellowish brown (10YR 5/4) gravelly silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; few faint patchy clay films lining pores and on faces of peds; 15 percent gravel; mildly alkaline (pH 7.8); clear wavy boundary.

Btk—33 to 45 inches; light yellowish brown (10YR 6/4) gravelly silt loam, yellowish brown (10YR 5/4) moist; strong medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; common distinct clay films lining pores and on faces of peds; 20 percent basalt gravel; strongly effervescent; many fine irregular seams of soft lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Bkqm—45 inches; indurated lime- and silica-cemented duripan; violently effervescent.

Thickness of mollic epipedon: 10 to 18 inches

Depth to duripan: 40 to 60 inches or more

Particle-size control section: 18 to 28 percent clay and 0 to 15 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Content of clay—10 to 15 percent

Reaction—neutral or slightly alkaline

AB horizon:

Value—4 or 5 dry, 3 or 4 moist
Texture—silt loam or loam
Content of clay—10 to 15 percent
Reaction—neutral or slightly alkaline

Bt horizon:

Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry
Texture—loam, silt loam, or clay loam
Content of clay—22 to 28 percent
Reaction—slightly alkaline or moderately alkaline

Btk horizon:

Value—4 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry, 3 or 4 moist
Texture—loam, silt loam, or clay loam
Content of clay—22 to 28 percent
Calcium carbonate equivalent—5 to 20 percent
Reaction—slightly alkaline to strongly alkaline

Bertolotti Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountainsides and toeslopes

Parent material: Colluvium and residuum derived from gneiss and granite with a mantle of volcanic ash

Slope range: 5 to 90 percent

Elevation: 2,100 to 5,400 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Andic Dystroxerepts

Typical pedon of Bertolotti ashy sandy loam in Kittitas County, Washington, about 4 miles southwest of Cle Elum; 1,500 feet north and 50 feet east of the southwest corner of section 7, T. 19 N., R. 15 E.; latitude 47 degrees 9 minutes 5 seconds north and longitude 121 degrees 1 minute 24 seconds west.

Oi—0 to 1 inch; slightly decomposed forest litter; abrupt wavy boundary.

A1—1 to 3 inches; grayish brown (10YR 5/2) ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; loose, nonsticky and nonplastic; common very fine roots; slightly acid (pH 6.2); clear wavy boundary.

A2—3 to 11 inches; brown (10YR 5/3) ashy sandy loam, brown (10YR 4/3) moist; weak fine granular structure; loose, nonsticky and nonplastic; common very fine and fine roots; 10 percent gravel; NaF pH 10.2; slightly acid (pH 6.2); clear wavy boundary.

2Bw1—11 to 17 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 30 percent gravel; NaF pH 10.2; moderately acid (pH 6.0); abrupt wavy boundary.

2Bw2—17 to 27 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and few medium roots; 45 percent gravel and 5 percent cobbles; strongly acid (pH 5.4); abrupt wavy boundary.

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2C—27 to 61 inches; light olive brown (2.5Y 5/4) extremely cobbly loam, dark grayish brown (2.5Y 4/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine roots; 50 percent gravel and 30 percent cobbles; strongly acid (pH 5.4).

Thickness of volcanic ash mantle: 7 to 11 inches

Particle-size control section: Averages 10 to 15 percent clay and 40 to 70 percent rock fragments

A1 horizon:

Value—2 or 3 moist, 4 to 6 dry

Chroma—2 or 3 moist or dry

Content of clay—5 to 8 percent

A2 horizon:

Value—3 to 5 moist, 4 to 6 dry

Content of clay—5 to 10 percent

2Bw horizon:

Value—3 or 4 moist

Chroma—3 or 4 dry or moist

Texture of *2Bw1 horizon*—gravelly loam, very gravelly loam, or very gravelly sandy loam

Texture of *2Bw2 horizon*—very gravelly loam, very gravelly sandy loam, or extremely cobbly loam

Content of clay—10 to 15 percent

Reaction—moderately acid or strongly acid

2C horizon:

Hue—10YR or 2.5Y

Chroma—2 to 4 moist

Texture—extremely cobbly loam, very cobbly loam, or extremely gravelly sandy loam

Content of clay—10 to 15 percent

Reaction—moderately acid or strongly acid

Blint Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Colluvium derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 15 to 70 percent

Elevation: 1,500 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Blint very cobbly ashy loam in Kittitas County, Washington, about 6 miles south of Ellensburg; about 700 feet south and 1,350 feet west of the northeast corner of section 7, T. 16 N, R. 19 E.; latitude 46 degrees 53 minutes 35 seconds north and longitude 120 degrees 29 minutes 29 seconds west; NAD 83.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) very cobbly ashy loam, black (10YR 2/1) moist; moderate fine and medium granular structure; soft, very friable,

nonsticky and nonplastic; many very fine and few fine roots; common very fine vesicular pores; 20 percent gravel and 20 percent cobbles; neutral (pH 7.2); clear smooth boundary.

A2—4 to 10 inches; very dark grayish brown (10YR 3/2) very gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; common very fine tubular and vesicular pores; 30 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.

2Bt1—10 to 18 inches; brown (10YR 5/3) very gravelly loam, very dark brown (10YR 3/2) moist; moderate very fine, fine, and medium subangular blocky structure; moderately hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; few faint clay films on surfaces along pores; 35 percent gravel and 15 percent cobbles; neutral (pH 7.1); clear wavy boundary.

2Bt2—18 to 22 inches; yellowish brown (10YR 5/4) extremely cobbly silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few very fine tubular pores; few distinct clay films on surfaces along pores; 35 percent gravel and 20 percent cobbles; neutral (pH 7.2); abrupt irregular boundary.

3R—22 inches; basalt.

Thickness of mollic epipedon: 18 to 25 inches

Thickness of volcanic ash influence: 7 to 10 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 23 to 33 percent clay and 40 to 75 percent rock fragments

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly ashy loam, very gravelly ashy loam, or very gravelly ashy silt loam

Content of clay—15 to 20 percent

2Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—1 or 2 dry or moist

Texture—very gravelly loam or very gravelly silt loam in the upper part and extremely gravelly loam, extremely cobbly silt loam, or very cobbly clay loam in the lower part

Content of clay—23 to 33 percent

Reaction—slightly acid or neutral

Bocker Series

Depth class: Very shallow

Drainage class: Well drained

Position on landscape: Mountain slopes and plateaus

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash in the upper part

Slope range: 0 to 25 percent

Elevation: 2,400 to 5,500 feet

Mean annual precipitation: 17 to 40 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 80 to 120 days

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Taxonomic classification: Loamy-skeletal, mixed, superactive, frigid Lithic Haploxerolls

Typical pedon of Bocker very cobbly silt loam in Kittitas County, Washington, about 11 miles west of Ellensburg; 2,210 feet west and 1,455 feet north of the southeast corner of section 14, T. 18 N., R. 16 E.; latitude 47 degrees 2 minutes 42 seconds north and longitude 120 degrees 48 minutes 4 seconds west; NAD 83.

A—0 to 3 inches; reddish brown (5YR 5/3) very cobbly silt loam, dark reddish brown (5YR 3/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; 20 percent cobbles and 30 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

Bw—3 to 9 inches; reddish brown (5YR 5/3) very gravelly loam, dark reddish brown (5YR 3/3) moist; weak fine angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine irregular and few very fine tubular pores; 40 percent gravel; neutral (pH 6.6); abrupt irregular boundary.

R—9 inches; basalt.

Thickness of mollic epipedon: 4 to 10 inches

Depth to bedrock: 4 to 10 inches

Particle-size control section: Averages 18 to 24 percent clay and 35 to 70 percent rock fragments

A horizon:

Hue—10YR or 5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 to 3 dry or moist

Content of clay—18 to 22 percent

Bw horizon:

Hue—10YR or 5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 to 3 dry or moist

Texture—very gravelly loam, extremely gravelly loam, or extremely cobbly loam

Content of clay—20 to 24 percent

Reaction—neutral or slightly acid

Bograp Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash in the upper part

Slope range: 25 to 65 percent

Elevation: 2,150 to 5,300 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 145 days

Taxonomic classification: Fine-loamy, isotic, frigid Vitrandic Palexeralfs

Typical pedon of Bograp ashy sandy loam in Kittitas County, Washington, about 6 miles west of Cle Elum; 800 feet east and 1,400 feet north of the southwest corner of section 30, T. 20 N., R. 15 E.; Ronald, Washington, U.S. Geological Survey

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topographic quadrangle; latitude 47 degrees 11 minutes 39 seconds north and longitude 121 degrees 1 minute, 22 seconds west.

Oe—0 to 4 inches; decomposed and partially decomposed forest litter; abrupt smooth boundary.

A1—4 to 12 inches; brown (7.5YR 5/3) ashy sandy loam, dark brown (7.5YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine irregular pores; 2 percent gravel; NaF pH 8.5; neutral (pH 6.6); clear wavy boundary.

A2—12 to 19 inches; reddish brown (5YR 5/3) ashy loam, dark reddish brown (5YR 3/4) moist; weak fine granular and subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; 2 percent gravel; NaF pH 8.5; slightly acid (pH 6.4); abrupt smooth boundary.

BA—19 to 28 inches; brown (7.5YR 5/4) gravelly loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 15 percent gravel; NaF pH 8.0; slightly acid (pH 6.4); abrupt wavy boundary.

Bt—28 to 64 inches; strong brown (7.5YR 5/6) cobbly clay loam, strong brown (7.5YR 4/6) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few medium and coarse roots; common very fine tubular pores; few faint clay films on faces of peds and in pores; 5 percent gravel and 15 percent cobbles; NaF pH 8.0; moderately acid (pH 6.0).

Thickness of volcanic ash influence: 7 to 19 inches

Particle-size control section: 18 to 35 percent clay and 10 to 35 percent rock fragments

A1 horizon:

Hue—7.5YR or 5Y

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Content of clay—5 to 15 percent

Reaction—slightly acid or neutral

A2 horizon:

Hue—10YR or 5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—ashy loam or ashy sandy loam

Content of clay—5 to 18 percent

Reaction—moderately acid to neutral

BA horizon:

Hue—10YR or 5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—4 to 6 dry

Texture—gravelly loam or loam

Content of clay—15 to 25 percent

Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 to 6 dry or moist

Texture—cobbly clay loam, clay loam, gravelly clay loam, or gravelly loam

Content of clay—18 to 35 percent

Reaction—slightly acid or moderately acid

Brickmill Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,400 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic
Haploxerolls

Typical pedon of Brickmill gravelly ashy loam in Kittitas County, Washington, about 3 miles northeast of Ellensburg; 1,100 feet east and 2,500 feet south of the northwest corner of section 19, T. 18 N., R. 19 E.; latitude 47 degrees 0 minutes 14 seconds north and longitude 120 degrees 30 minutes 46 seconds west.

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate thick platy structure parting to moderate medium subangular blocky; slightly hard, very friable, nonsticky and slightly plastic; many very fine roots; common fine and medium irregular pores; 15 percent gravel and 5 percent cobbles; slightly effervescent; slightly acid (pH 6.3); clear wavy boundary.

A—5 to 12 inches; very dark grayish brown (10YR 3/2) gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate thick platy structure parting to moderate fine and medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; common fine and medium irregular pores; 15 percent gravel and 5 percent cobbles; slightly effervescent; neutral (pH 7.0); clear wavy boundary.

Bw1—12 to 28 inches; brown (10YR 5/3) very gravelly ashy sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; common fine and medium irregular pores; 40 percent gravel and 20 percent cobbles; slightly effervescent; neutral (pH 7.3); clear wavy boundary.

2Bw2—28 to 38 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; many fine and medium irregular and tubular pores; 45 percent gravel and 20 percent cobbles; many large prominent yellowish red (5YR 4/6) redoximorphic concentrations; slightly effervescent; neutral (pH 7.3); gradual irregular boundary.

2BC—38 to 49 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 50 percent gravel and 20 percent cobbles; many large prominent yellowish red (5YR 4/6) redoximorphic concentrations; slightly effervescent; neutral (pH 7.2); gradual irregular boundary.

3C—49 to 60 inches; light olive brown (2.5Y 5/4) extremely gravelly loamy coarse sand, very dark grayish brown (2.5Y 3/2) moist; single grain; loose; common very fine roots; 50 percent gravel, 15 percent cobbles, and 5 percent stones; many large distinct black (5Y 2.5/2) redoximorphic segregations; slightly effervescent; neutral (pH 7.0).

Thickness of mollic epipedon: 10 to 20 inches

Thickness of volcanic ash influence: 7 to 28 inches

Irrigation-induced apparent water table: Present at some time during the irrigation season

Particle-size control section: 5 to 15 percent clay and 40 to 70 percent rock fragments

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 20 percent

Reaction—slightly acid or neutral

Bw horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, or very cobbly ashy loam

Content of clay—15 to 20 percent

Reaction—neutral or slightly alkaline

2Bw horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—extremely gravelly sandy loam, very gravelly sandy clay loam, or extremely cobbly sandy loam

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline

2BC horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry

Texture—extremely gravelly sandy loam, very gravelly sandy loam, or extremely cobbly sandy loam

Content of clay—12 to 15 percent clay

Reaction—neutral or slightly alkaline

3C horizon:

Hue—2.5Y or 5Y

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 to 4 dry, 1 or 2 moist

Texture—extremely gravelly loamy coarse sand, extremely gravelly sand, or extremely cobbly loamy sand

Content of clay—0 to 10 percent

Reaction—neutral or slightly alkaline

Brisky Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Summits and shoulders of mountain slopes

Parent material: Colluvium derived from sandstone mixed with volcanic ash and loess

Slope range: 30 to 60 percent

Elevation: 2,800 to 4,600 feet

Mean annual precipitation: 21 to 24 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 110 to 130 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Ultic Haploxerolls

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Typical pedon of Brisky very cobbly loam in Kittitas County, Washington, about 2 miles northeast of Liberty; about 700 feet east and 1,250 feet north of the southwest corner of section 30, T. 21 N., R. 18 E.; latitude 47 degrees 16 minutes 48 seconds north and longitude 120 degrees 38 minutes 24 seconds west; NAD 83.

A1—0 to 4 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine and very fine tubular pores; 15 percent gravel and 25 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

A2—4 to 9 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine tubular pores; 25 percent gravel and 30 percent cobbles; slightly acid (pH 6.5); gradual irregular boundary.

Bw—9 to 18 inches; brown (10YR 5/3) extremely cobbly loam, brown (10YR 4/3) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common very fine and fine tubular pores; 40 percent gravel and 40 percent cobbles; slightly acid (pH 6.5); gradual irregular boundary.

R—18 inches; hard sandstone.

Thickness of mollic epipedon: 7 to 10 inches (mixed)

Depth to bedrock: 10 to 20 inches

Particle-size control section: 5 to 15 percent clay and 35 to 65 percent rock fragments

Reaction: slightly acid or neutral throughout

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 15 percent

Bw horizon:

Value—5 to 7 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—extremely cobbly loam, very gravelly loam, very cobbly loam, or very gravelly sandy loam

Content of clay—5 to 15 percent

Brysill Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Alluvial fans and terraces

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,200 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitritorrandic Argixerolls

Typical pedon of Brysill cobbly ashy loam ([fig. 1](#)) in Kittitas County, Washington, about 6 miles north of Kittitas; about 200 feet west and 900 feet south of the northeast corner of section 11, T. 18 N., R. 19 E.; Colockum Pass SW, Washington, U.S. Geographical Survey topographic quadrangle; latitude 47 degrees 4 minutes 19 seconds north and longitude 120 degrees 24 minutes 45 seconds west.

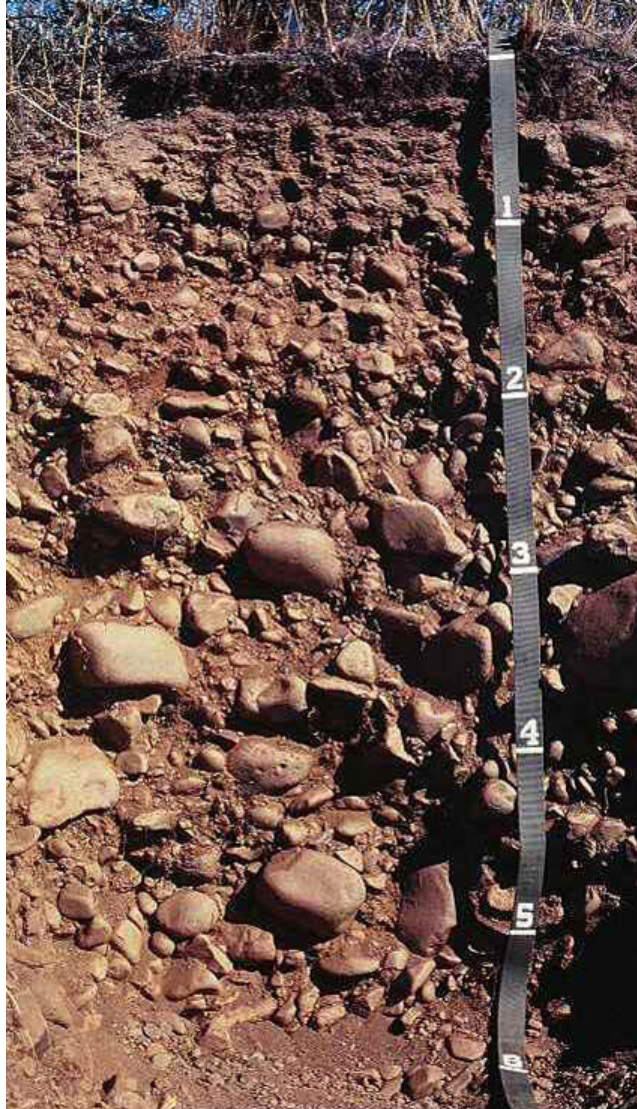


Figure 1.—Typical profile of Brysill cobbly ashy loam.
Extremely cobbly loamy sand is at a depth of 48 inches.
Scale is in feet.

- A—0 to 9 inches; brown (10YR 4/3) cobbly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine, medium, and very coarse granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; 10 percent gravel and 15 percent cobbles; NaF pH 8.5; neutral (pH 6.9); clear smooth boundary.
- BA—9 to 15 inches; brown (10YR 4/3) very gravelly ashy loam, dark brown (10YR 3/3) moist; weak fine, medium, and very coarse granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few coarse roots; many very fine irregular pores; 35 percent gravel and 10 percent cobbles; NaF pH 8.5; neutral (pH 6.9); clear wavy boundary.
- 2Bt—15 to 25 inches; brown (7.5YR 4/3) very gravelly sandy clay loam, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium

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roots; common very fine irregular pores; common faint pressure faces on peds, common faint clay bridges in pores, and many faint clay films on rock fragments; 45 percent gravel and 10 percent cobbles; NaF pH 8.3; neutral (pH 6.9); clear wavy boundary.

2BC—25 to 48 inches; brown (10YR 4/3) extremely gravelly sandy loam, dark brown (10YR 3/3) moist; single grain; loose; common very fine and few medium roots; 45 percent gravel and 20 percent cobbles; NaF pH 8.3; neutral (pH 6.9); abrupt wavy boundary.

3C—48 to 60 inches; brown (10YR 4/3) extremely cobbly loamy sand, dark brown (10YR 3/3) moist; single grain; loose; few very fine roots; 45 percent gravel and 25 percent cobbles; NaF pH 8.3; neutral (pH 6.9).

Thickness of mollic epipedon: 20 to 35 inches

Thickness of volcanic ash influence: 11 to 18 inches

Particle-size control section: 25 to 30 percent clay and 40 to 80 percent rock fragments

A horizon:

Value—2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam, cobbly ashy loam, gravelly ashy loam, or very cobbly ashy loam

Content of clay—14 to 17 percent

Reaction—slightly alkaline or moderately alkaline

BA horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Texture—very gravelly ashy loam or extremely gravelly ashy loam

Content of clay—14 to 17 percent

Reaction—slightly acid or neutral

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry

Texture—very gravelly sandy clay loam, extremely cobbly sandy clay loam, or extremely gravelly sandy clay loam

Content of clay—25 to 30 percent

Reaction—slightly alkaline or moderately alkaline

2BC horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry

Texture—extremely gravelly sandy loam, very gravelly sandy loam, or extremely cobbly sandy loam

Content of clay—15 to 20 percent clay

Reaction—neutral or slightly alkaline

3C horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry

Texture—extremely gravelly loamy sand, extremely cobbly loamy sand, or extremely gravelly sand

Content of clay—0 to 10 percent

Reaction—neutral or slightly alkaline

Burbank Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces and terrace escarpments

Parent material: Glacial outwash or alluvium

Slope range: 5 to 60 percent

Elevation: 500 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Sandy-skeletal, mixed, mesic Xeric Torriorthents

Typical pedon of Burbank very cobbly loamy sand in Kittitas County, Washington, about 4.5 miles south of Vantage; about 2,200 feet west and 1,800 feet south of the northeast corner of section 13, T. 16 N., R. 22 E.; latitude 46 degrees 52 minutes 44 seconds north and longitude 120 degrees 0 minutes 39 seconds west; NAD 83.

A—0 to 5 inches; brown (10YR 5/3) very cobbly loamy sand, dark brown (10YR 3/3) moist; single grain; loose; common very fine and fine roots; 25 percent gravel and 15 percent cobbles; slightly alkaline (pH 7.6); gradual wavy boundary.

Bw—5 to 17 inches; pale brown (10YR 6/3) very cobbly loamy sand, dark brown (10YR 3/3) moist; single grain; loose; few very fine and fine roots; 30 percent gravel and 20 percent cobbles; slightly alkaline; gradual wavy boundary.

Bk1—17 to 36 inches; light brownish gray (10YR 6/2) very gravelly sand, very dark grayish brown (10YR 3/2) moist; single grain; loose; few very fine and fine roots; 35 percent gravel and 15 percent cobbles, some with coatings of lime and silica on the lower side; slightly effervescent; moderately alkaline (pH 7.9); abrupt wavy boundary.

Bk2—36 to 60 inches; dark gray (10YR 4/1) extremely cobbly coarse sand, very dark gray (10YR 3/1) moist; single grain; loose; 45 percent gravel and 25 cobbles, some with coating of lime and silica on the lower side; strongly effervescent; moderately alkaline (pH 7.9).

Particle-size control section: 0 to 5 percent clay and 35 to 75 percent rock fragments

A horizon:

Value—4 to 6 dry, 2 to 4 moist

Chroma—1 to 3 dry or moist

Content of clay—0 to 5 percent

Bw horizon:

Value—4 to 6 dry, 2 to 4 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly loamy sand or very gravelly loamy fine sand

Content of clay—0 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Bk horizon:

Value—4 to 7 dry, 3 to 5 moist

Chroma—1 to 3 dry or moist

Texture—very gravelly sand, extremely cobbly coarse sand, or very cobbly loamy sand

Content of clay—0 to 5 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Caliralls Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Loess and colluvium derived from basalt

Slope range: 10 to 45 percent

Elevation: 1,100 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 100 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Calciargidic
Argixerolls

Typical pedon of Caliralls silt loam in Kittitas County, Washington, about 13 miles south of Kittitas; about 1,600 feet north and 600 feet west of the southeast corner of section 12, T. 15 N., R. 19 E.; latitude 46 degrees 47 minutes 57 seconds north and longitude 120 degrees 23 minutes 0 seconds west.

A—0 to 5 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak very thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine and few coarse roots; few fine vesicular pores; 5 percent gravel; neutral (pH 7.0); clear wavy boundary.

AB—5 to 12 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and coarse roots; common very fine tubular pores; 10 percent firm cicada casts; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt1—12 to 20 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common fine tubular pores; few faint clay films lining pores; 80 percent cicada casts with pockets of 15 percent soft casts; 5 percent gravel and 2 percent cobbles; slightly alkaline (pH 7.4); clear wavy boundary.

Bt2—20 to 31 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine roots between peds and few very fine roots in peds; common fine tubular pores; few prominent clay films lining pores; 90 percent cicada casts; 15 percent gravel and 5 percent cobbles; slightly alkaline (pH 7.5); clear wavy boundary.

Btk1—31 to 39 inches; light yellowish brown (10YR 6/4) gravelly silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine roots; common fine tubular pores; common prominent clay films on faces of peds; 10 percent cicada casts; carbonate pendants on underside of coarse fragments; 20 percent gravel, 5 percent cobbles, and 5 percent stones; very slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

Btk2—39 to 45 inches; pale brown (10YR 6/3) gravelly silt loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine roots; common fine tubular pores; common faint clay

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films lining pores; 20 percent gravel, 5 percent cobbles, and 5 percent stones; slightly effervescent; moderately alkaline (pH 7.9); clear wavy boundary.
Btk3—45 to 52 inches; light yellowish brown (10YR 6/4) gravelly silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; few very fine roots; common fine tubular pores; few faint clay films lining pores; 20 percent gravel, 5 percent cobbles, and 5 percent stones; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
Btk4—52 to 60 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine tubular pores; few faint clay films lining pores; 25 percent gravel, 10 percent cobbles, and 5 percent stones; strongly effervescent; moderately alkaline (pH 8.3).

Thickness of mollic epipedon: 10 to 12 inches

Particle-size control section: 25 to 35 percent clay and 15 to 25 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Content of clay—15 to 20 percent clay

AB horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Texture—silt loam or loam

Content of clay—15 to 20 percent

Bt horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—gravelly loam, gravelly clay loam, or silt loam

Content of clay—25 to 35 percent

Reaction—neutral or slightly alkaline

Btk horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—gravelly silt loam or gravelly clay loam in the upper part and very gravelly loam, very gravelly clay loam, gravelly silt loam, or gravelly clay loam in the lower part

Content of clay—20 to 40 percent

Calcium carbonate equivalent—20 to 40 percent

Reaction—slightly alkaline or moderately alkaline in the upper part and moderately alkaline or strongly alkaline in the lower part

Camaspatch Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Summits of hillslopes and structural benches

Parent material: Loess and colluvium and residuum derived from basalt

Slope range: 3 to 70 percent

Elevation: 1,000 to 4,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 120 to 135 days

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Taxonomic classification: Clayey-skeletal, smectitic, mesic Lithic Argixerolls

Typical pedon of Camaspatch very cobbly loam in Kittitas County, Washington, about 11 miles south of Ellensburg; about 700 feet south and 2,500 feet east of the northwest corner of section 33, T. 16 N., R. 18 E.; latitude 46 degrees 50 minutes 21 seconds north and longitude 120 degrees 34 minutes 56 seconds west.

A—0 to 4 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure parting to moderate medium and coarse granular; hard, firm, slightly sticky and slightly plastic; many very fine and few fine roots; few very fine tubular and many very fine vesicular pores; 15 percent gravel and 30 percent cobbles; neutral (pH 7.1); clear smooth boundary.

Bt1—4 to 9 inches; brown (10YR 4/3) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine, medium, and coarse granular structure; very hard, very firm, moderately sticky and moderately plastic; many very fine and few fine roots; few very fine tubular pores; many prominent clay films on faces of peds and in pores; 40 percent gravel and 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt2—9 to 15 inches; brown (10YR 4/3) extremely cobbly clay, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; many very fine roots; few very fine tubular pores; many prominent clay films on faces of peds and in pores; 45 percent gravel and 35 percent cobbles; neutral (pH 6.7); abrupt irregular boundary.

R—15 inches; basalt.

Thickness of mollic epipedon: 7 to 15 inches

Depth to bedrock: 10 to 20 inches

Particle-size control section: 35 to 50 percent clay and 35 to 80 percent rock fragments

Reaction: Neutral throughout

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—20 to 27 percent

Reaction—slightly alkaline or moderately alkaline

Bt horizon:

Value—3 to 5 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly clay loam, very cobbly clay loam, extremely cobbly clay, very cobbly clay, or very gravelly clay

Content of clay—averages 35 to 50 percent

Chapot Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from basalt and scoria with a minor amount of volcanic ash in the upper part

Slope range: 30 to 75 percent

Elevation: 2,900 to 5,500 feet

Mean annual precipitation: 35 to 40 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 80 to 120 days

Soil Survey of Kittitas County Area, Washington

Taxonomic classification: Loamy-skeletal, mixed, superactive, frigid Ultic Haploxeralfs

Typical pedon of Chapot very gravelly ashy sandy loam in Kittitas County, Washington, about 1 mile west of Blewett Pass; 2,480 feet west and 750 feet north of the southeast corner of section 34, T. 22 N., R. 17 E.; latitude 47 degrees 20 minutes 54 seconds north and longitude 120 degrees 41 minutes 35 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed forest litter; abrupt smooth boundary.

A—1 to 7 inches; light brownish gray (10YR 6/2) very gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; common very fine tubular pores; 35 percent gravel and 5 percent paragravel; neutral (pH 6.6); clear smooth boundary.

BA—7 to 15 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common medium tubular pores; 25 percent pebbles, 15 percent paragravel, and 10 percent cobbles; slightly acid (pH 6.4); clear smooth boundary.

Bt1—15 to 25 inches; light yellowish brown (10YR 6/4) very gravelly loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; hard, very firm, slightly sticky and slightly plastic; common fine and medium roots; few fine and very fine tubular pores; few patchy faint clay skins on faces of peds; 45 percent gravel, 15 percent paragravel, and 10 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—25 to 37 inches; brownish yellow (10YR 6/6) extremely gravelly clay loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; hard, very firm, sticky and plastic; few medium roots; common medium and coarse tubular pores; common discontinuous faint clay skins on faces of peds and in pores; 50 percent gravel, 10 percent paragravel, and 10 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

Bt3—37 to 60 inches; brownish yellow (10YR 6/6) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; hard, very firm, sticky and plastic; few medium roots; very few fine tubular pores; common discontinuous faint clay skins on faces of peds and in pores; 50 percent gravel, 10 percent paragravel, and 15 percent cobbles; neutral (pH 6.6).

Thickness of volcanic ash influence: 1 to 7 inches

Particle-size control section: Averages 22 to 30 percent clay and 35 to 60 percent rock fragments

Reaction: Slightly acid or neutral throughout

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—5 to 15 percent

BA horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly loam, gravelly loam, or gravelly sandy loam

Content of clay—10 to 18 percent

Bt1 horizon:

Hue—10YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—very gravelly loam, extremely gravelly loam, or extremely cobbly loam

Content of clay—22 to 25 percent

Bt2 and Bt3 horizons:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—extremely gravelly clay loam, very gravelly clay loam, very gravelly loam, or extremely cobbly clay loam

Content of clay—25 to 30 percent

Cheviot Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Footslopes and backslopes of hills

Parent material: Loess and colluvium derived from basalt

Slope range: 15 to 75 percent

Elevation: 800 to 3,000 feet

Mean annual precipitation: 9 to 13 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Aridic Haploxerolls

Typical pedon of Cheviot very cobbly loam in Kittitas County, Washington, about 14 miles south of Ellensburg; about 400 feet south and 2,350 feet west of the northeast corner of section 16, T. 15 N., R. 19 E.; Wymer, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 47 minutes 40 seconds north and longitude 120 degrees 27 minutes 14 seconds west.

A1—0 to 4 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine pores; 15 percent gravel and 25 percent cobbles; neutral (pH 7.1); clear smooth boundary.

A2—4 to 16 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine pores; 30 percent gravel and 20 percent cobbles; slightly alkaline (pH 7.4); gradual wavy boundary.

Bw—16 to 44 inches; yellowish brown (10YR 5/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine and fine pores; 30 percent gravel and 25 percent cobbles; slightly alkaline (pH 7.6); gradual wavy boundary.

Bk—44 to 49 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine pores; 25 percent gravel and 40 percent cobbles; strongly effervescent; thin carbonate coatings on bottoms of rock fragments; moderately alkaline (pH 8.3); gradual wavy boundary.

C—49 to 60 inches; very pale brown (10YR 7/3) extremely cobbly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly

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plastic; few very fine roots; few very fine and fine pores; 25 percent gravel and 40 percent cobbles; moderately alkaline (pH 8.0).

Thickness of mollic epipedon: 10 to 17 inches

Particle-size control section: 15 to 25 percent clay and 35 to 70 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Texture—very gravelly silt loam, very cobbly loam, or very gravelly loam in the lower part

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline

Bw horizon:

Value—3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly loam, extremely cobbly loam, or extremely gravelly loam

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline

Bk horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—extremely cobbly loam, very cobbly loam, or extremely gravelly loam

Content of clay—15 to 25 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

C horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—extremely cobbly loam, very cobbly loam, or extremely gravelly loam

Content of clay—15 to 25 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Chinkmin Series

Depth class: Moderately deep

Drainage class: Moderately well drained

Position on landscape: Cirques, mountain slopes, glacial trough valleys, lateral moraines, and till plains of mountains

Parent material: Volcanic ash, pumice, and colluvium over dense basal till

Slope range: 5 to 60 percent

Elevation: 2,500 to 5,200 feet

Mean annual precipitation: 80 to 120 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 50 to 70 days

Taxonomic classification: Medial-skeletal, amorphic Andic Duricryods

Typical pedon of Chinkmin ashy sandy loam in Kittitas County, Washington, about 2 miles north of Hyak; 2,000 feet north and 2,000 feet west of the southeast corner of section 4, T. 22 N., R. 11 E.; latitude 47 degrees 25 minutes 18 seconds north and longitude 121 degrees 24 minutes 36 seconds west; NAD 83.

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- Oi—0 to 1 inch; slightly decomposed, loose forest litter consisting of needles, twigs, bark, and moss.
- Oa—1 to 2 inches; highly decomposed, black (10YR 2/1) organic matter that is matted and bound by roots; abrupt smooth boundary.
- E—2 to 5 inches; brown (7.5YR 5/2) ashy sandy loam, gray (10YR 6/1) dry; single grain; loose; common very fine, fine, medium, and coarse roots; many very fine and fine interstitial pores; very strongly acid (pH 4.8); abrupt wavy boundary.
- 2Bhs1—5 to 11 inches; brown (7.5YR 4/4) cobbly medial loam, dark brown (10YR 4/4) dry; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; moderately smeary; common very fine, fine, medium, and coarse roots; many very fine and fine interstitial pores; 10 percent gravel and 5 percent cobbles; very strongly acid (pH 4.6); abrupt wavy boundary.
- 2Bhs2—11 to 16 inches; brown (7.5YR 4/4) cobbly medial loam, brownish yellow (10YR 6/6) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; common very fine and fine interstitial pores; 15 percent gravel and 15 percent cobbles; very strongly acid (pH 5.0); abrupt smooth boundary.
- 2Bs1—16 to 23 inches; brown (7.5YR 4/4) very cobbly medial sandy loam, light yellowish brown (2.5Y 6/4) dry; weak medium subangular blocky structure; hard, friable, nonsticky and slightly plastic; weakly smeary; coarse vertical tongues of black (10YR 2/1) silt loam organic matter; few fine roots; many interstitial pores; 20 percent gravel and 25 percent cobbles; very strongly acid (pH 5.0); clear wavy boundary.
- 2Bs2—23 to 33 inches; dark yellowish brown (10YR 3/4) very gravelly medial sandy loam, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; weakly smeary; few very fine roots; many interstitial pores; 35 percent gravel and 10 percent cobbles; strongly acid (pH 5.4); abrupt smooth boundary.
- 3Bqm—33 to 60 inches; dark grayish brown (2.5Y 4/2) moderately cemented glacial till, light gray (2.5Y 7/2) dry; common fine prominent reddish brown (5YR 4/4) redoximorphic concentrations; massive; very hard, extremely firm, nonsticky and nonplastic; 45 percent subangular gravel and 20 percent subangular cobbles; strongly acid (pH 5.4).

Thickness of albic horizon: 2 to 5 inches

Thickness of spodic horizon: 5 to 23 inches

Thickness of volcanic ash influence: 20 to 40 inches

Depth to cemented glacial till: 20 to 40 inches

Depth to perched water table: 1.5 to 3.0 feet in November through July

Particle-size control section: 5 to 15 percent clay and 35 to 70 percent rock fragments

E horizon:

Hue—7.5YR or 10YR

Value—5 or 6 moist, 6 or 7 dry

Chroma—1 or 2 moist or dry

Content of clay—5 to 10 percent

Reaction—slightly alkaline or moderately alkaline

2Bhs1 horizon:

Hue—7.5YR or 5YR moist, 10YR dry

Value—2 to 4 moist, 3 to 5 dry

Chroma—3 to 6 moist, 4 to 6 dry

Texture—cobbly medial loam, gravelly medial loam, gravelly medial sandy loam, or medial loam

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Content of clay—5 to 15 percent
Reaction—very strongly acid or moderately acid

2Bhs2 horizon:

Hue—7.5YR or 5YR moist, 10YR dry
Value—3 or 4 moist, 4 to 6 dry
Chroma—4 to 6 moist, 4 to 8 dry
Texture—cobbly medial loam, gravelly medial loam, very gravelly medial loam, or gravelly medial silt loam
Content of clay—5 to 15 percent
Reaction—very strongly acid or moderately acid

2Bs1 horizon:

Hue—7.5YR or 10YR moist, 2.5Y dry
Value—4 to 6 moist, 5 or 6 dry
Chroma—4 to 6 moist, 4 to 8 dry
Texture—very cobbly medial sandy loam, very gravelly medial sandy loam, or very cobbly medial loam
Content of clay—5 to 15 percent
Reaction—very strongly acid or strongly acid

2Bs2 horizon:

Hue—7.5YR or 10YR
Value—3 to 5 moist, 5 to 7 dry
Chroma—3 to 6 moist or dry
Texture—very gravelly medial sandy loam, very cobbly medial sandy loam, or very gravelly sandy loam
Content of clay—5 to 15 percent
Reaction—strongly acid or moderately acid

3Bqm horizon:

Hue—5Y, 2.5Y, or 10YR
Value—4 or 5 moist, 5 to 7 dry
Chroma—2 to 8 dry or moist
Texture—cemented till that breaks to very gravelly loam, extremely gravelly loam, very cobbly sandy loam, or very stony sandy loam
Content of clay—5 to 15 percent
Reaction—strongly acid

Cleman Series

Depth class: Very deep
Drainage class: Well drained
Position on landscape: Alluvial fans and flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Elevation: 1,200 to 2,200 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 135 to 200 days

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Torrifluventic Haploxerolls

Typical pedon of Cleman very fine sandy loam in Kittitas County, Washington; about 750 feet east and 500 feet south of the northwest corner of section 21, R. 19 E.,

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T. 15 N.; latitude 46 degrees 46 minutes 47 seconds north and longitude 120 degrees 27 minutes 44 seconds west; NAD 83.

A—0 to 6 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine pores; neutral (pH 7.0); abrupt wavy boundary.

A2—6 to 14 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; slightly alkaline (pH 7.4); clear wavy boundary.

C1—14 to 42 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; slightly alkaline (pH 7.4); abrupt wavy boundary.

C2—42 to 60 inches; light yellowish brown (10YR 6/4) very fine sandy loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; moderately alkaline (pH 8.4).

Thickness of the mollic epipedon: 10 to 20 inches

Particle-size control section: 5 to 10 percent clay and 0 to 15 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist or dry

Content of clay—5 to 10 percent

Reaction—neutral or slightly alkaline

C1 horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—stratified silt loam to loamy fine sand

Content of clay—5 to 10 percent

Reaction—neutral or slightly alkaline

C2 horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—stratified silt loam to sand

Content of clay—2 to 15 percent

Reaction—slightly alkaline or moderately alkaline

Clenage Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of hillslopes

Parent material: Residuum and colluvium derived from basalt and interbedded sediment mixed with loess

Slope range: 15 to 60 percent

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Xeric Haplargids

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Typical pedon of Clenage very gravelly loam in Kittitas County, Washington, about 3.5 miles southwest of Vantage; about 3,100 feet east and 850 feet north of the southwest corner of section 28, T. 17 N., R. 22 E.; Ginkgo, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 55 minutes 48 seconds north and longitude 120 degrees 4 minutes 42 seconds west; NAD 83.

A—0 to 3 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to fine and medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine roots; few fine interstitial and irregular pores; 30 percent gravel and 15 percent cobbles; slightly alkaline (pH 7.4); clear wavy boundary.

Bt1—3 to 8 inches; brown (10YR 4/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and moderately plastic; many very fine and common medium and coarse roots; many fine and medium interstitial and tubular pores; common distinct clay films lining pores and on faces of peds; 20 percent gravel and 5 percent cobbles; slightly alkaline (pH 7.4); clear wavy boundary.

Bt2—8 to 16 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, moderately sticky and moderately plastic; common very fine and few medium roots; many fine and medium interstitial and tubular pores; common distinct clay films lining pores and on faces of peds; 30 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.4); abrupt wavy boundary.

2Btk1—16 to 20 inches; brown (10YR 5/3) very gravelly clay, brown (10YR 4/3) moist; strong medium prismatic structure parting to strong fine and medium angular blocky; very hard, firm, sticky and plastic; few very fine and medium roots; many fine to coarse irregular pores; many prominent clay films lining pores and on faces of peds; few distinct coatings of lime on vertical and horizontal faces of peds; 30 percent gravel and 10 percent cobbles; strongly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

3Btk2—20 to 25 inches; brown (10YR 5/3) extremely gravelly clay, brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; many fine and medium irregular pores; common distinct clay films lining pores and on faces of peds; common distinct coatings of lime on vertical and horizontal faces of peds; 35 percent gravel, 20 percent cobbles, and 10 percent stones; strongly effervescent; moderately alkaline (pH 8.0); abrupt irregular boundary.

4R—25 inches; fractured basalt with coatings of silica on 30 percent of total surface area.

Depth to bedrock: 20 to 40 inches

Particle-size control section: Averages 35 to 42 percent clay and 35 to 50 percent rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 moist

Content of clay—18 to 25 percent

Reaction—neutral or slightly alkaline

Bt horizon:

Value—4 or 5 dry

Chroma—2 or 3 moist

Texture—gravelly clay loam or very gravelly clay loam

Content of clay—31 to 35 percent

Reaction—neutral or slightly alkaline

2Btk horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very gravelly clay, extremely gravelly clay, or extremely cobbly clay

Content of clay—40 to 55 percent

Calcium carbonate equivalent—5 to 15 percent

Reaction—slightly alkaline or moderately alkaline

Clerf Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes and summits of hills

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 3 to 70 percent

Elevation: 700 to 3,400 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Aridic Paleixerolls

Typical pedon of Clerf very cobbly clay loam in Kittitas County, Washington, about 4 miles southeast of Kittitas; 1,800 feet north and 200 feet west of the southeast corner of section 28, T. 17 N., R. 20 E.; latitude 46 degrees 55 minutes 55 seconds north and longitude 120 degrees 19 minutes 33 seconds west; NAD 83.

A—0 to 9 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; 20 percent gravel and 20 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

Bt1—9 to 12 inches; dark yellowish brown (10YR 4/4) very cobbly clay, dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few very fine irregular pores; many distinct clay films on faces of peds; common distinct clay films on rock fragments; 20 percent gravel and 20 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—12 to 24 inches; yellowish brown (10YR 4/4) very cobbly clay, dark yellowish brown (10YR 3/4) moist; strong coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; continuous prominent clay films on faces of peds and many prominent clay films on rock fragments; 20 percent gravel and 30 percent cobbles; neutral (pH 7.2); abrupt irregular boundary.

2R—24 inches; fractured basalt.

Thickness of the mollic epipedon: 9 to 14 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: Averages 47 to 60 percent clay and 40 to 65 percent rock fragments

A horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—20 to 35 percent

Reaction—slightly alkaline or moderately alkaline

Bt horizon:

Hue—10YR or 7.5YR

Value—3 to 5 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly clay, very gravelly clay, extremely cobbly clay, or extremely gravelly clay

Content of clay—47 to 60 percent

Reaction—neutral or slightly alkaline

Cliffdell Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from basalt and andesite with a mantle of volcanic ash

Slope range: 5 to 75 percent

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 25 to 55 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 70 to 100 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Andic Dystroxerepts

Typical pedon of Cliffdell gravelly ashy sandy loam in Kittitas County, Washington, about 7 miles south of Cle Elum; 2,000 feet north and 2,000 feet west of the southeast corner of section 35, T. 19 N., R. 15 E.; latitude 47 degrees 5 minutes 35 seconds north and longitude 120 degrees 55 minutes 48 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed needles, twigs, and leaves.

A1—1 to 2 inches; light brownish gray (10YR 6/2) gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; many very fine irregular pores; 20 percent gravel and 5 percent cobbles; slightly acid (pH 6.4); abrupt smooth boundary.

A2—2 to 9 inches; brown (10YR 5/3) gravelly ashy sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine and medium roots; 20 percent gravel and 5 percent cobbles; slightly acid (pH 6.2); NaF pH 10.1; abrupt smooth boundary.

2Bw1—9 to 26 inches; yellowish brown (10YR 5/4) very cobbly loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; soft, friable, nonsticky and slightly plastic; common fine and medium roots; few very fine irregular pores; 25 percent gravel and 30 percent cobbles; moderately acid (pH 5.8); clear wavy boundary.

2Bw2—26 to 38 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine irregular pores; 40 percent gravel and 30 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.

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2Bw3—38 to 60 inches; yellowish brown (10YR 5/6) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few fine roots; common very fine irregular pores; 30 percent gravel and 45 percent cobbles; moderately acid (pH 6.0).

Thickness of volcanic ash influence: 7 to 10 inches

Particle-size control section: Averages 10 to 18 percent clay and 40 to 80 percent rock fragments

A horizon:

Value—4 to 6 dry, 2 or 3 moist

Chroma—2 to 4 dry or moist

Content of clay—5 to 10 percent

Reaction—slightly alkaline or moderately alkaline

2Bw1 horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry

Chroma—3 or 4 dry

Texture—very cobbly loam, very gravelly loam, or very cobbly sandy loam

Content of clay—10 to 18 percent

Reaction—moderately acid or slightly acid

2Bw2 and 2Bw3 horizons:

Hue—10YR or 7.5YR

Value—4 or 5 dry

Chroma—4 or 6 dry

Content of clay—10 to 18 percent

Reaction—moderately acid or slightly acid

Cowiche Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Residuum derived from interbedded sediment with loess in the upper part

Slope range: 15 to 30 percent

Elevation: 1,300 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Aridic Argixerolls

Typical pedon of Cowiche loam in Kittitas County, Washington, about 13 miles south of Ellensburg; about 2,400 feet south and 400 feet east of the northwest corner of section 7, T. 15 N., R. 19 E.; The Cottonwoods, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 48 minutes 11 seconds north and longitude 120 degrees 30 minutes 23 seconds west; NAD 83.

A1—0 to 5 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium and thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; few fine interstitial pores; neutral (pH 7.2); clear wavy boundary.

A2—5 to 15 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular

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- blocky; soft, very friable, nonsticky and nonplastic; common very fine and few coarse roots; common fine tubular pores; neutral (pH 7.2); clear wavy boundary.
- BAt—15 to 22 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and few medium and coarse roots; many very fine tubular pores; common medium cicada casts; slightly alkaline (pH 7.4); clear wavy boundary.
- Bt—22 to 35 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; moderate medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine and few medium roots; few fine tubular pores; common medium cicada casts; slightly alkaline (pH 7.5); clear wavy boundary.
- Btk1—35 to 44 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; few fine tubular pores; 5 percent gravel; thin coatings of lime on rock fragments; slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.
- Btk2—44 to 51 inches; light yellowish brown (2.5Y 6/3) clay loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, moderately sticky and moderately plastic; few very fine roots; few fine tubular pores; 5 percent gravel; thin coatings of lime on rock fragments; slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.
- 2Bk—51 to 60 inches; light gray (2.5Y 7/2) sandy loam, light olive brown (2.5Y 5/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 10 percent gravel; disseminated lime, thin coatings of lime on rock fragments, some segregated lime in root channels, and few fine threads of lime; violently effervescent; moderately alkaline (pH 8.4).

Thickness of mollic epipedon: 10 to 20 inches

Depth to secondary carbonates: 45 to 53 inches

Particle-size control section: 18 to 30 percent clay and 0 to 5 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—10 to 20 percent

Reaction—neutral or slightly alkaline

BAt and Bt horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—clay loam, loam, or sandy clay loam

Content of clay—18 to 30 percent

Reaction—neutral or slightly alkaline

Btk horizon:

Hue—10YR or 2.5Y

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—clay loam, loam, or sandy clay loam

Content of clay—18 to 30 percent

Calcium carbonate equivalent—3 to 10 percent
Reaction—slightly alkaline or moderately alkaline

2Bk horizon:

Hue—10YR or 2.5Y
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—sandy loam, very fine sandy loam, or loamy fine sand
Content of clay—5 to 20 percent
Calcium carbonate equivalent—5 to 15 percent
Reaction—slightly alkaline or moderately alkaline

Cryaquepts

Depth class: Very deep
Drainage class: Poorly drained
Position on landscape: Depressions of glacial valleys
Parent material: Alluvium and volcanic ash
Slope range: 0 to 3 percent
Elevation: 2,700 to 5,900 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 35 to 40 degrees F
Frost-free period: 40 to 85 days

Taxonomic classification: Cryaquepts

Typical pedon of Cryaquepts ashy silt loam in Kittitas County, Washington, about 9 miles northeast of Cle Elum Lake; about 2,630 feet east and 1,320 feet south of the northwest corner of section 33, T. 23 N., R. 15 E.; latitude 47 degrees 26 minutes 36 seconds north and longitude 120 degrees 58 minutes 40 seconds west.

- A1—0 to 2 inches; very dark brown (10YR 2/2) ashy silt loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine roots; common very fine tubular pores; neutral (pH 6.6); abrupt smooth boundary.
- A2—2 to 7 inches; brown (10YR 5/3) ashy silt loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine roots; few very fine tubular and common fine irregular pores; discontinuous lenses of sandy loam at upper boundary; common fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; neutral (pH 6.6); clear wavy boundary.
- Bg1—7 to 14 inches; pale brown (10YR 6/3) ashy silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine roots; few fine tubular and common fine irregular pores; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; neutral (pH 6.6); clear smooth boundary.
- Bg2—14 to 27 inches; very pale brown (10YR 7/3) ashy silt loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; weakly smeary; few very fine roots; few fine and medium tubular and irregular pores; common fine prominent yellowish brown (10YR 5/8) redoximorphic concentrations; 5 percent gravel; neutral (pH 6.8); abrupt wavy boundary.
- 2Bg3—27 to 60 inches; light olive gray (5Y 6/2) clay loam, olive gray (5Y 5/2) moist; massive; very hard, firm, slightly sticky and slightly plastic; few very fine roots; few

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fine tubular and common fine irregular pores; common fine distinct greenish gray (5GY 6/1) redoximorphic depletions; 10 percent gravel; neutral (pH 7.0).

Thickness of volcanic ash influence: 5 to 27 inches

Water table: Present year round

Particle-size control section: 20 to 35 percent clay and 0 to 10 percent rock fragments

Reaction: Slightly acid or neutral throughout

A horizon:

Value—2 to 6 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—20 to 26 percent

Bg horizon:

Value—2 to 7 dry, 2 to 5 moist

Chroma—1 to 4 dry or moist

Texture—ashy silt loam or ashy loam

Content of clay—20 to 26 percent

2Bg horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—clay loam, silt loam, or silty clay loam

Content of clay—20 to 35 percent

Cryofluvents

Depth class: Very deep

Drainage class: Somewhat poorly drained to moderately well drained

Position on landscape: Stream terraces and flood plains

Parent material: Alluvium with volcanic ash in the upper part

Slope range: 0 to 3 percent

Elevation: 2,600 to 4,600 feet

Mean annual precipitation: 60 to 100 inches

Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 50 to 80 days

Taxonomic classification: Cryofluvents

Typical pedon of Cryofluvents very cobbly ashy sandy loam in Kittitas County, Washington, about 1 mile west of Little Kachess Lake; 2,200 feet east and 820 feet south of the northwest corner of section 19, T. 22 N., R. 13 E.; latitude 47 degrees 23 minutes 16 seconds north and longitude 121 degrees 15 minutes 53 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed leaves, twigs, and needles; abrupt smooth boundary.

A—1 to 7 inches; dark grayish brown (10YR 4/2) very cobbly ashy sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; few coarse and common very fine and fine roots; common fine tubular pores; 20 percent gravel and 20 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

C1—7 to 13 inches; brown (10YR 5/3) very cobbly ashy sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine interstitial pores; 30 percent gravel and 25 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

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2C2—13 to 60 inches; brown (10YR 5/3), stratified extremely cobbly sand to gravelly sandy loam, dark brown (10YR 3/3) moist; common fine prominent yellowish brown (10YR 5/6) rust stains on sand, gravel, and cobbles below a depth of 24 inches; single grain; loose; 35 percent gravel and 40 percent cobbles; neutral (pH 6.6).

Thickness of volcanic ash influence: 5 to 13 inches

Water table: Present some time during year

Particle-size control section: Averages 2 to 10 percent clay and 15 to 80 percent rock fragments

Reaction: Strongly acid to neutral throughout

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 10 percent

C horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 or 3 dry or moist

Texture—very cobbly ashy sandy loam or extremely cobbly ashy sandy loam

Content of clay—5 to 10 percent

2C horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 or 3 dry or moist

Texture—stratified extremely cobbly sand to gravelly sandy loam

Content of clay—0 to 10 percent

Cryorthents

Depth class: Very deep

Drainage class: Somewhat poorly drained to well drained

Position on landscape: Alluvial fans and stream terraces

Parent material: Alluvium with volcanic ash in the upper part

Slope range: 0 to 30 percent

Elevation: 2,400 to 3,700 feet

Mean annual precipitation: 70 to 100 inches

Mean annual air temperature: 37 to 42 degrees F

Frost-free period: 40 to 80 days

Taxonomic classification: Cryorthents

Typical pedon of Cryorthents gravelly ashy sandy loam, stony, in Kittitas County, Washington, about 1 mile southwest of Huckleberry Mountain; 1,580 feet west and 1,850 feet north of the southeast corner of section 26, T. 23 N., R. 14 E.; latitude 47 degrees 27 minutes 6 seconds north and longitude 121 degrees 2 minutes 45 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed forest litter; abrupt smooth boundary.

A1—1 to 2 inches; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine roots; common very fine irregular pores; 20 percent gravel; slightly acid (pH 6.4); abrupt smooth boundary.

A2—2 to 5 inches; brown (10YR 5/3) gravelly ashy sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to weak medium granular; slightly hard, very friable, nonsticky and nonplastic; weakly smeary; common

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medium roots; common very fine tubular pores; 20 percent gravel; slightly acid (pH 6.4); abrupt smooth boundary.

AC1—5 to 12 inches; light olive brown (2.5Y 5/3) very gravelly ashy sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine roots; common very fine tubular pores; 30 percent gravel and 10 percent cobbles; neutral (pH 6.6); abrupt wavy boundary.

AC2—12 to 21 inches; light brownish gray (2.5Y 6/2) very gravelly ashy sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine roots; many fine irregular pores; 40 percent gravel, 15 percent cobbles, and 3 percent stones; neutral (pH 6.6); abrupt wavy boundary.

2C1—21 to 27 inches; light brownish gray (2.5Y 6/2) very cobbly sandy loam, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; very few very fine roots; 35 percent gravel, 20 percent cobbles, and 5 percent stones; neutral (pH 6.6); abrupt wavy boundary.

2C2—27 to 60 inches; light brownish gray (2.5Y 6/2) extremely cobbly loamy sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; very few very fine roots; 30 percent gravel, 40 percent cobbles, and 10 percent stones; neutral (pH 6.8).

Thickness of volcanic ash influence: 6 to 30 inches

Depth to 2C horizon: 10 to 40 inches

Particle-size control section: Averages 2 to 10 percent clay and 55 to 80 percent rock fragments

A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 15 percent

Reaction—slightly acid or moderately acid

AC horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly ashy sandy loam, very cobbly ashy sandy loam, or extremely cobbly ashy sandy loam

Content of clay—5 to 15 percent

Reaction—slightly acid or moderately acid

BC horizon (where present):

Hue—10YR or 2.5Y

Value—5 or 6 dry, 4 to 6 moist

Chroma—2 to 6 dry or moist

Texture—extremely cobbly ashy loamy sand or extremely gravelly ashy loamy sand

Content of clay—0 to 5 percent

Reaction—slightly alkaline or moderately alkaline

2C horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 4 or 6 moist

Chroma—2 or 3 dry or moist

Texture—very cobbly sandy loam, very gravelly sandy loam, extremely gravelly loamy sand, extremely cobbly loamy sand, or extremely cobbly sand

Content of clay—0 to 10 percent

Reaction—slightly acid to moderately alkaline

Cumulic Haploxerolls

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Basin floors and terraces

Parent material: Alluvium

Slope range: 0 to 3 percent

Elevation: 2,200 to 4,900 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 100 days

Taxonomic classification: Cumulic Haploxerolls

Typical pedon of Cumulic Haploxerolls silt loam in Kittitas County, Washington, about 1 mile northeast of Teanaway Campground; 1,300 feet east and 1,580 feet south of the northwest corner of section 32, T. 21 N., R. 16 E., latitude 47 degrees 16 minutes 12 seconds north and longitude 120 degrees 52 minutes 2 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed forest litter; abrupt smooth boundary.

A1—1 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; few fine tubular pores; slightly acid (pH 6.2); clear smooth boundary.

A2—8 to 18 inches; brown (10YR 4/3) silty clay loam, very dark gray (10YR 3/1) moist; moderate medium granular structure; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; slightly acid (pH 6.2); clear wavy boundary.

Bw1—18 to 27 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common fine roots; common very fine and fine tubular pores; slightly acid (pH 6.2); clear wavy boundary.

Bw2—27 to 36 inches; brown (10YR 5/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few fine and medium roots; few fine tubular pores; moderately acid (pH 6.0); clear wavy boundary.

Bw3—36 to 46 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/3) moist; weak medium subangular blocky structure; very hard, friable, sticky and slightly plastic; few fine roots; few fine tubular pores; moderately acid (pH 6.0); clear wavy boundary.

Bw4—46 to 53 inches; light yellowish brown (10YR 6/4) silty clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; moderately acid (pH 6.0); clear wavy boundary.

Cg—53 to 60 inches; light brownish gray (10YR 6/2) silty clay loam, light grayish brown (10YR 4/2) moist; massive; very hard, moderately sticky and moderately plastic; few very fine roots; few fine tubular pores; common fine distinct redoximorphic concentrations that are (7.5YR 4/8) moist; moderately acid (pH 6.0).

Thickness of mollic epipedon: 20 to 40 inches

Water table: Present some time during the year

Particle-size control section: Averages 20 to 35 percent clay and 0 to 10 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—20 to 26 percent

Reaction—slightly acid or neutral

Bw horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—silty clay loam, silt loam, or clay loam

Content of clay—20 to 35 percent

Reaction—moderately acid or slightly acid

Cg horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—silty clay loam, silt loam, or clay loam

Content of clay—20 to 35 percent

Reaction—moderately acid or slightly acid

Currier Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Backslopes, toeslopes, and summits of mountains

Parent material: Colluvium and residuum derived from gneiss and granitic rock with a mantle of volcanic ash

Slope range: 5 to 90 percent

Elevation: 3,000 to 6,000 feet

Mean annual precipitation: 45 to 70 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Ashy-skeletal over loamy-skeletal, amorphic over isotic
Typic Vitricryands

Typical pedon of Currier cobbly ashy sandy loam in Kittitas County, Washington, about 4 miles southeast of Easton; 1,600 feet east and 50 feet south of the northwest corner of section 6, T. 19 N., R. 14 E.; latitude 47 degrees 10 minutes 33 seconds north and longitude 121 degrees 8 minutes 48 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter; abrupt wavy boundary.

A1—1 to 3 inches; dark grayish brown (10YR 4/2) cobbly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; single grain; loose; common fine and few medium roots; 5 percent gravel and 15 percent cobbles; NaF pH 9.6; moderately acid (pH 6.0); clear wavy boundary.

A2—3 to 9 inches; brown (10YR 5/3) very gravelly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; single grain; loose; common fine and medium and few coarse roots; 25 percent gravel and 10 percent cobbles; NaF pH 10.5; moderately acid (pH 5.8); gradual irregular boundary.

Bw1—9 to 26 inches; yellowish brown (10YR 5/4) very gravelly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; very

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friable, soft, nonsticky and nonplastic; weakly smeary; common fine and medium roots; 30 percent gravel and 10 percent cobbles; NaF pH 10.5; moderately acid (pH 6.0); gradual wavy boundary.

Bw2—26 to 36 inches; light yellowish brown (10YR 6/4) extremely gravelly ashy sandy loam, brown (10YR 4/3) moist; weak very fine subangular blocky structure; very friable, soft, nonsticky and nonplastic; weakly smeary; common fine and medium roots; 50 percent gravel and 10 percent cobbles; NaF pH 10.5; moderately acid (pH 5.8); clear wavy boundary.

2BC—36 to 60 inches; pale yellow (2.5Y 7/4) extremely gravelly sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 55 percent gravel and 5 percent cobbles; NaF pH 10.0; strongly acid (pH 5.4).

Thickness of volcanic ash mantle: 30 to 36 inches

Particle-size control section: Ashy-skeletal part—5 to 12 percent clay and 35 to 65 percent rock fragments; loamy-skeletal part—5 to 15 percent clay and 40 to 80 percent rock fragments

A1 horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry

Content of clay—5 to 10 percent clay

A2 horizon:

Chroma—3 or 4 dry

Texture—very gravelly ashy sandy loam, very gravelly ashy loam, or gravelly ashy loam

Content of clay—5 to 12 percent

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 moist

Texture—very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, extremely gravelly ashy loam, or extremely cobbly ashy loam

Content of clay—5 to 12 percent

2BC horizon:

Hue—10YR, 2.5Y, or 5Y

Value—5 to 7 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—extremely gravelly sandy loam, extremely cobbly sandy loam, or extremely cobbly loam

Content of clay—5 to 15 percent

Reaction—strongly acid or moderately acid

Darland Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium derived from basalt mixed with loess and volcanic ash in the upper part

Slope range: 30 to 70 percent

Elevation: 4,100 to 6,600 feet

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Mean annual precipitation: 25 to 75 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 30 to 90 days

Taxonomic classification: Loamy-skeletal, isotic Vitrandic Haplocryolls

Typical pedon of Darland very gravelly ashy loam in Kittitas County, Washington, about 0.5 mile southeast of Wenatchee Mountain; about 2,000 feet west and 1,000 feet north of the southeast corner of section 36, T. 21 N., R. 19 E.; latitude 47 degrees 15 minutes 54 seconds north and longitude 120 degrees 23 minutes 53 seconds west; NAD 83.

A1—0 to 7 inches; dark yellowish brown (10YR 4/4) very gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; few fine pores; 35 percent gravel, 1 percent cobbles, and less than 1 percent stones; neutral (pH 6.6); abrupt smooth boundary.

A2—7 to 15 inches; brown (10YR 4/3) very gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, friable, slightly sticky and slightly plastic; common fine and medium roots; few fine pores; 35 percent gravel and 5 percent cobbles; neutral (pH 6.6); clear wavy boundary.

A3—15 to 21 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 35 percent gravel and 18 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

Bw—21 to 32 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 15 percent gravel and 65 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.

C—32 to 60 inches; dark yellowish brown (10YR 4/4) extremely cobbly sandy loam, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; few fine and medium roots; 10 percent gravel, 65 percent cobbles, and 1 percent stones; slightly acid (pH 6.4).

Thickness of mollic epipedon: 20 to 43 inches

Thickness of volcanic ash influence: 7 to 19 inches

Particle-size control section: 10 to 18 percent clay and 35 to 80 percent rock fragments

A1 horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—3 or 4 dry, 2 or 3 moist

Content of clay—10 to 18 percent

Reaction—slightly acid or neutral

A2 and A3 horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—3 or 4 dry, 2 or 3 moist

Content of clay—10 to 18 percent

Reaction—slightly acid or neutral

Bw horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 moist

Texture—extremely cobbly loam, very gravelly loam, or very cobbly loam

Content of clay—10 to 18 percent

Reaction—slightly acid or neutral

C horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 moist

Texture—extremely cobbly sandy loam, extremely cobbly loam, or very cobbly sandy loam

Content of clay—5 to 15 percent

Deedale Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Flood plains

Parent material: Alluvium

Slope range: 0 to 2 percent

Elevation: 1,500 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine, smectitic, mesic Xeric Endoaquerts

Typical pedon of Deedale clay loam in Kittitas County, Washington, about 5 miles southwest of Kittitas; about 400 feet south and 1,200 feet east of the northwest corner of section 19, T. 17 N., R. 18 E.; latitude 46 degrees 57 minutes 16 seconds west and longitude 120 degrees 30 minutes 42 seconds north; NAD 83.

Ap—0 to 6 inches; dark gray (10YR 4/1) clay loam, black (10YR 2/1) moist; moderate medium granular structure parting to moderate fine granular; very hard, firm, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine tubular and common fine irregular pores; 0.5- to 1-inch vertical cracks; slightly effervescent; moderately alkaline (pH 7.9); abrupt smooth boundary.

A—6 to 12 inches; dark gray (10YR 4/1) clay loam, black (10YR 2/1) moist; moderate fine angular blocky structure parting to moderate fine granular; very hard, firm, slightly sticky and slightly plastic; few very fine and fine and few medium roots; few very fine tubular and common fine irregular pores; slightly effervescent; 0.75-inch vertical cracks; moderately alkaline (pH 7.9); abrupt wavy boundary.

Bssg1—12 to 19 inches; dark gray (10YR 4/1) clay, black (10YR 2/1) moist; moderate medium angular blocky structure parting to moderate fine angular blocky; very hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular and common fine irregular pores; few fine prominent brownish yellow (10YR 6/8) iron accumulations; common white (10YR 8/1) fine seams of lime; many distinct intersecting slickensides; 0.5-inch vertical cracks; slightly effervescent; moderately alkaline (pH 7.9); clear wavy boundary.

Bssg2—19 to 25 inches; dark gray (10YR 4/1) clay, black (10YR 2/1) moist; moderate coarse angular blocky structure parting to moderate medium subangular blocky; very hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular and many fine irregular pores; few fine prominent brownish yellow (10YR 6/8) iron accumulations; many distinct intersecting slickensides; 0.25-inch cracks; slightly alkaline (pH 7.8); clear wavy boundary.

Bg1—25 to 31 inches; gray (10YR 5/1) clay, very dark gray (10YR 3/1) moist; moderate coarse angular blocky structure parting to moderate medium subangular blocky; extremely hard, extremely firm, very sticky and very plastic; few very fine roots; common very fine and fine vesicular and irregular pores; common fine prominent dark yellowish brown (10YR 3/6) iron accumulations; slightly alkaline (pH 7.8); clear wavy boundary.

Bg2—31 to 36 inches; grayish brown (2.5Y 5/2) clay, very dark grayish brown (2.5Y 3/2) moist; moderate coarse angular blocky structure parting to moderate medium angular blocky; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine vesicular and irregular pores; common fine prominent yellowish brown (10YR 5/8) iron accumulations; 5 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bg3—36 to 54 inches; grayish brown (2.5Y 5/2) clay, very dark grayish brown (2.5Y 3/2) moist; moderate coarse angular blocky structure parting to moderate medium angular blocky; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine vesicular and irregular pores; common fine and medium prominent yellowish brown (10YR 5/8) iron accumulations; 5 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

2Bg4—54 to 60 inches; grayish brown (2.5Y 5/2) extremely gravelly sandy clay loam, very dark grayish brown (2.5Y 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; common prominent yellowish brown (10YR 5/8) iron accumulations; 60 percent gravel and 15 percent cobbles; slightly alkaline (pH 7.6).

Thickness of mollic epipedon: More than 40 inches

Irrigation-induced water table: Present at some time during the year

Particle-size control section: 45 to 60 percent clay and 0 to 10 percent rock fragments

Reaction: Slightly alkaline or moderately alkaline throughout

Ap and A horizons:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Content of clay—30 to 40 percent

Bssg and Bg horizons:

Hue—10YR or 2.5Y

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Content of clay—40 to 60 percent

2Bg4 horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly sandy clay loam or extremely gravelly sandy clay loam

Content of clay—30 to 40 percent

Deroux Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium and residuum derived from sandstone with a mantle of volcanic ash

Slope range: 30 to 90 percent

Elevation: 2,900 to 6,200 feet

Mean annual precipitation: 40 to 65 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Andic Dystroxerepts

Typical pedon of Deroux cobbly ashy sandy loam in Kittitas County, Washington, about 3 miles southeast of Esmeralda Peaks; 1,930 feet east and 450 feet south of the

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northeast corner of section 14, T. 22 N., R. 15 E.; latitude 47 degrees 24 minutes 11 seconds north and longitude 120 degrees 55 minutes 20 seconds west; NAD 83.

Oi—0 to 2 inches; duff and litter; abrupt wavy boundary.

A—2 to 9 inches; dark grayish brown (10YR 4/2) cobbly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; loose; common very fine and fine roots; 6 percent gravel and 15 percent cobbles; NaF pH 10.5; slightly acid (pH 6.2); abrupt wavy boundary.

Bw1—9 to 12 inches; yellowish brown (10YR 5/4) very cobbly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; many very fine and fine and common medium and coarse roots; 10 percent gravel, 30 percent cobbles, and 5 percent stones; NaF pH 11.5; moderately acid (pH 6.0); clear wavy boundary.

2Bw2—12 to 25 inches; yellowish brown (10YR 5/4) very stony sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; 5 percent gravel, 20 percent cobbles, and 20 percent stones; NaF pH 11.5; moderately acid (pH 6.0); gradual wavy boundary.

2R—25 inches; fractured, hard Swauk sandstone.

Thickness of volcanic ash influence: 7 to 12 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 5 to 10 percent clay and averages 35 to 60 rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—5 to 8 percent

Bw1 horizon:

Value—3 or 4 moist

Content of clay—5 to 10 percent

Reaction—strongly acid or moderately acid

2Bw2 horizon:

Value—3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—very stony sandy loam or very cobbly sandy loam

Content of clay—5 to 10 percent

Disage Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Summits of hills

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 3 to 60 percent

Elevation: 1,000 to 2,400 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Lithic Xeric Haplargids

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Typical pedon of Disage cobbly loam in Kittitas county, Washington, about 12 miles south of Vantage; about 350 feet west and 1,900 feet south of the northeast corner of section 28, T. 15 N., R. 22 E.; latitude 46 degrees 45 minutes 41 seconds north and longitude 120 degrees 3 minutes 55 seconds west; NAD 83.

- A—0 to 4 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine to medium granular structure; loose, friable, nonsticky and slightly plastic; many very fine roots; 25 percent gravel and 15 percent cobbles; neutral; abrupt smooth boundary.
- BAt—4 to 9 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 4/3) moist; moderate fine to medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; few faint dark brown (7.5YR 3/2) clay films on faces of peds; 35 percent gravel and 10 percent cobbles; neutral; clear wavy boundary.
- Bt1—9 to 14 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few medium roots; few faint dark yellowish brown (10YR 3/4) clay films on faces of peds; 30 percent gravel and 20 percent cobbles; neutral; clear wavy boundary.
- Bt2—14 to 18 inches; yellowish brown (10YR 5/6) extremely cobbly clay loam, dark yellowish brown (10YR 3/6) moist; moderate fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few medium roots; few distinct dark yellowish brown (10YR 3/4) clay films on faces of peds; 35 percent gravel and 40 percent cobbles; neutral; abrupt irregular boundary.
- 2R—18 inches; basalt.

Depth to bedrock: 10 to 20 inches

Particle-size control section: Averages 35 to 50 percent clay and 35 to 55 percent rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 moist

Content of clay—20 to 25 percent

BAt horizon:

Texture—very gravelly clay loam or very cobbly clay loam

Content of clay—35 to 40 percent

Bt horizon:

Hue—10YR or 7.5YR

Chroma—3 to 5 dry or moist

Texture—very cobbly clay loam, extremely cobbly clay loam, very cobbly clay, or very gravelly clay loam

Content of clay—35 to 55 percent

Domerie Series

Depth class: Deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium and residuum derived from schist and phyllite with a mixture of volcanic ash in the upper part

Slope range: 30 to 70 percent

Elevation: 3,000 to 5,800 feet

Mean annual precipitation: 50 to 80 inches

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Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Ashy-skeletal, amorphic Typic Vitricryands

Typical pedon of Domerie gravelly ashy sandy loam in Kittitas County, Washington, about 3 miles west of Lake Cle Elum; 2,400 feet west and 300 feet south of the northeast corner of section 35, T. 22 N., R. 13 E.; Kachess Lake, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 21 minutes 36 seconds north and longitude 121 degrees 10 minutes 42 seconds south.

Oi—0 to 1 inch; needles, twigs, and partially decomposed litter; very strongly acid (pH 5.0); abrupt smooth boundary.

A—1 to 4 inches; brown (10YR 5/3) gravelly ashy sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; few very fine irregular pores; 25 percent gravel; 0.1 percent surface stones; NaF pH 9.2; moderately acid (pH 5.6); abrupt smooth boundary.

Bw1—4 to 9 inches; yellowish brown (10YR 5/4) channery ashy sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many fine, medium, and coarse roots; many very fine irregular pores; 25 percent channers and 5 percent gravel; NaF pH 11.5; moderately acid (pH 6.0); clear wavy boundary.

Bw2—9 to 21 inches; yellowish brown (10YR 5/4) very channery ashy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few coarse and many fine and medium roots; many very fine irregular pores; 35 percent channers and 5 percent gravel; NaF pH 11.0; moderately acid (pH 5.8) clear wavy boundary.

Bw3—21 to 34 inches; light yellowish brown (10YR 6/4) very channery ashy sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many fine and medium roots; many very fine irregular pores; 35 percent channers, 5 percent flagstones, 10 percent gravel, and 5 percent cobbles; NaF pH 11.0; moderately acid (pH 5.6); clear wavy boundary.

Bw4—34 to 41 inches; light yellowish brown (10YR 6/4) extremely channery ashy sandy loam, yellowish brown (10YR 5/4) moist; nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine irregular pores; 45 percent channers, 30 percent flagstones, 10 percent gravel, and 5 percent cobbles; NaF pH 10.5; strongly acid (pH 5.4); clear wavy boundary.

2Bw5—41 to 56 inches; light yellowish brown (10YR 6/4) extremely channery sandy loam, light olive brown (2.5Y 5/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; many very fine irregular pores; 50 percent channers, 5 percent cobbles, and 10 percent flagstones; NaF pH 10.0; moderately acid (pH 5.2); abrupt irregular boundary.

3R—56 inches; fractured phyllite.

Thickness of volcanic ash influence: 1 to 41 inches

Depth to bedrock: 40 to 60 inches

Particle-size control section: 8 to 15 percent clay and 40 to 70 percent rock fragments

Reaction: Strongly acid or moderately acid throughout

A horizon:

Value—5 or 6 dry

Chroma—2 or 3 dry, 2 to 4 moist

Content of clay—5 to 8 percent

Bw1 horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry

Chroma—3 or 4 dry or moist

Textures—channery ashy loam, very channery ashy sandy loam, or channery loam

Content of clay—8 to 15 percent

Bw2, Bw3, and Bw4 horizons:

Value—6 or 7 dry, 4 or 5 moist

Chroma—4 to 6 dry or moist

Texture—very flaggy ashy loam, very channery ashy sandy loam, or extremely channery sandy loam

Content of clay—8 to 15 percent

2Bw5 horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry

Chroma—4 to 6 moist

Texture—very channery loam or extremely channery sandy loam

Content of clay—8 to 15 percent

Drino Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Colluvium derived from basalt with loess in the upper part

Slope range: 3 to 75 percent

Elevation: 500 to 3,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Xeric Haplargids

Typical pedon of Drino very gravelly loam in Kittitas County, Washington, about 14 miles south of Vantage; 1,600 feet west and 800 feet north of southeast corner of section 7, T. 14 N., R. 23 E.; Priest Rapids, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 42 minutes 36 seconds west and longitude 119 degrees 59 minutes 7 seconds west; NAD 83.

A—0 to 3 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; few very fine tubular and common very fine irregular pores; 30 percent gravel, 15 percent cobbles, and 10 percent stones; neutral (pH 7.2); clear smooth boundary.

BA—3 to 7 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine prismatic structure; soft, very friable, nonsticky and nonplastic; common very fine roots; few very fine tubular and common very fine irregular pores; 35 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt1—7 to 14 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; soft, very friable, nonsticky and nonplastic; common very fine roots; few very fine tubular and few medium vesicular pores; few distinct clay films on faces of peds; 35 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

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- Bt2—14 to 19 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; few very fine tubular and common fine irregular pores; few distinct clay films on faces of peds; 35 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- Bk1—19 to 25 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; few very fine tubular and common fine irregular pores; few patchy coatings of lime on faces of peds; 40 percent gravel and 15 percent cobbles; slightly effervescent; slightly alkaline (pH 7.4); clear wavy boundary.
- Bk2—25 to 32 inches; brown (10YR 5/3) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; weak medium prismatic structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; few very fine tubular and common fine and medium vesicular pores; few patchy coatings of lime in root channels and pores; 35 percent gravel and 45 percent cobbles; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.
- Bk3—32 to 38 inches; pale brown (10YR 6/3) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; weak medium prismatic structure; loose, nonsticky and slightly plastic; few very fine roots; common filaments of lime throughout horizon; 30 percent gravel and 45 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary.
- R—38 inches; fractured basalt.

Depth to bedrock: 20 to 40 inches

Particle-size control section: 15 to 27 percent clay and 35 to 60 percent rock fragments

A horizon:

Value—3 or 4 moist

Content of clay—10 to 18 percent

Reaction—neutral or slightly alkaline

BA horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very gravelly loam or very cobbly loam

Content of clay—10 to 18 percent

Reaction—neutral or slightly alkaline

Bt horizon:

Chroma—3 or 4 dry or moist

Texture—very cobbly loam or very gravelly loam

Content of clay—15 to 27 percent

Reaction—neutral or slightly alkaline

Bk horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—extremely cobbly loam, very gravelly loam, or extremely gravelly loam

Content of clay—18 to 27 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Drysel Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Alluvial fans

Parent material: Alluvium with loess in the upper part

Slope range: 5 to 10 percent

Elevation: 1,000 to 1,800 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Xeric Argidurids

Typical pedon of Drysel loam, 2 to 5 percent slopes, about 2 miles east of Selah, Washington; about 1,350 feet east and 1,100 feet south of the northwest corner of section 22, T. 14 N., R. 19 E.; Pomona, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 41 minutes 26 seconds north and longitude 120 degrees 26 minutes 21 seconds west; NAD 83.

A—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; many very fine and few coarse roots; many very fine irregular pores; neutral (pH 7.2); clear smooth boundary.

AB—3 to 11 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few coarse roots; many very fine irregular pores; 5 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bt1—11 to 18 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; very friable, slightly sticky and slightly plastic; common fine and very fine roots; very fine irregular pores; very few faint clay films on faces of peds and lining pores; 5 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bt2—18 to 27 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; very few distinct clay films on faces of peds and lining pores; 5 percent gravel; slightly alkaline (pH 7.8); abrupt wavy boundary.

Btk—27 to 31 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; very few distinct clay films lining pores; few fine rounded soft masses of lime; 10 percent gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

2Bkqm—31 inches; very gravelly indurated duripan.

Depth to duripan: 20 to 40 inches

Particle-size control section: 25 to 35 percent clay and 2 to 25 percent rock fragments

A and AB horizons:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 18 percent

Reaction—neutral or slightly alkaline

Bt horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—loam, silty clay loam, or silt loam
Content of clay—25 to 35 percent

Btk horizon:

Value—5 to 8 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—loam, gravelly clay loam, or clay loam
Content of clay—25 to 35 percent
Calcium carbonate equivalent—5 to 20 percent
Reaction—Slightly alkaline or moderately alkaline

Durixerolls

Depth class: Moderately deep
Drainage class: Well drained
Position on landscape: Alluvial fan escarpments
Parent material: Alluvium with loess in the upper part
Slope range: 30 to 65 percent
Elevation: 1,400 to 2,600 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 170 days

Taxonomic classification: Durixerolls

Typical pedon of Durixerolls very gravelly loam in Kittitas County, Washington; about 400 feet north and 100 feet west of the southeast corner of section 20, T. 14 N., R. 22 E.; Black Rock Spring NE, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 40 minutes 6 seconds north and longitude 120 degrees 5 minutes 7 seconds west; NAD 83.

- A—0 to 9 inches; brown (10YR 4/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; 30 percent gravel and 10 percent cobbles; neutral (pH 7.0); clear wavy boundary.
- Bt1—9 to 12 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common fine tubular pores; few faint clay films lining pores; 25 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.9); clear wavy boundary.
- Bt2—12 to 21 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common fine tubular pores; few distinct clay films lining pores and on faces of peds; 50 percent gravel and 15 percent cobbles; slightly effervescent; moderately alkaline (pH 7.9); abrupt smooth boundary.
- 2Bkqm—21 to 31 inches; strongly cemented to moderately cemented alluvial material; abrupt wavy boundary.
- 3Bkqm/C—31 to 61 inches; strongly cemented to moderately cemented material with lenses of very gravelly sandy loam.

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Depth to duripan: 10 to 40 inches

Particle-size control section: 17 to 40 percent clay and 20 to 60 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 26 percent

Bt1 horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly loam, gravelly clay loam, or very cobbly clay loam

Content of clay—17 to 35 percent

Bt2 horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—extremely gravelly loam, very gravelly clay loam, or very cobbly loam

Content of clay—20 to 40 percent

Calcium carbonate equivalent—5 to 25 percent

Reaction—slightly alkaline or moderately alkaline

2Bkqm horizon:

Cementation—strongly cemented or moderately cemented

3Bkqm/C horizon:

Cementation—strongly cemented or moderately cemented

Lenses—very gravelly sandy loam material

Durtash Series

Depth class: Shallow to a duripan

Drainage class: Well drained

Position on landscape: Alluvial fans

Parent material: Alluvium with loess in the upper part

Slope range: 2 to 30 percent

Elevation: 1,500 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic, shallow Abruptic
Argiduridic Durixerolls

Typical pedon of Durtash gravelly loam, 5 to 10 percent slopes, in Kittitas County, Washington, about 9 miles south of Kittitas; about 900 feet south and 2,400 feet east of the northwest corner of section 31, T. 14 N, R. 21 E.; latitude 46 degrees 39 minutes 41 seconds north and longitude 120 degrees 14 seconds 42 seconds west; NAD 83.

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and few medium roots; many very fine irregular pores; 21 percent gravel and 3 percent cobbles; neutral (pH 7.0); clear wavy boundary.

A2—4 to 7 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic;

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common fine and few medium roots; common very fine irregular pores; 21 percent gravel and 3 percent cobbles; neutral (pH 7.4); abrupt wavy boundary.

Bt1—7 to 10 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; strong medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; common fine and few medium roots; many very fine and fine tubular pores, common distinct dark yellowish brown (10YR 4/4) clay films lining pores; 30 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.4); clear wavy boundary.

Bt2—10 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, brown (10YR 4/3) moist; strong medium subangular blocky structure; very hard, very friable, sticky and plastic; common fine roots; common very fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films lining pores; 45 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.4); abrupt irregular boundary.

Bt3—14 to 19 inches; yellowish brown (10YR 5/4) extremely gravelly clay, brown (10YR 4/3) moist; strong medium subangular blocky structure; very hard, friable, sticky and plastic; few fine roots; common very fine tubular pores; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; 50 percent gravel and 20 percent cobbles; slightly alkaline (pH 7.6); abrupt irregular boundary.

Bqkm—19 to 29 inches; strongly cemented, lime and silica duripan; abrupt wavy boundary.

Bqkm/C—29 to 60 inches; weakly cemented to strongly cemented very gravelly sandy loam.

Thickness of mollic epipedon: 7 to 12 inches

Depth to duripan: 10 to 20 inches

Particle-size control section: 35 to 60 percent clay and 35 to 70 percent rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Texture—gravelly loam or cobbly loam

Content of clay—15 to 25 percent

Reaction—slightly acid to slightly alkaline

Bt1 and Bt2 horizons:

Hue—10YR or 7.5YR

Value—4 or 5 dry

Chroma—3 to 5 dry or moist

Texture—very gravelly clay loam, very cobbly clay loam, or extremely gravelly loam

Content of clay—35 to 60 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Bt3 horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry

Chroma—3 to 5 dry or moist

Texture—very gravelly clay or extremely gravelly clay

Content of clay—35 to 60 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Bqkm horizon:

Cementation—strongly cemented

Bkqm/C horizon:

Cementation—weakly cemented to very strongly cemented

Texture—very gravelly sandy loam, extremely gravelly sandy loam, or very cobbly sandy loam

Dystrocryepts

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces

Parent material: Alluvium

Slope range: 0 to 3 percent

Elevation: 2,600 to 4,600

Mean annual precipitation: 60 to 100 inches

Mean annual air temperature: 35 to 40 degrees

Frost-free period: 50 to 80 days

Taxonomic classification: Dystrocryepts

Typical pedon of Dystrocryepts ashy sandy loam, 0 to 3 percent slopes, about 0.75 mile south of Lookout Mountain; 730 feet east and 1,610 feet north of the southwest corner of section 29, T. 19 N., R. 14 E.; latitude 47 degrees 6 minutes 9 seconds north and longitude 121 degrees 7 minutes 49 seconds west; NAD 83.

Oe—0 to 2 inches; moderately decomposed forest litter; abrupt smooth boundary.

A1—2 to 12 inches; brown (10YR 5/3) ashy sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine roots; many very fine irregular pores; 13 percent gravel; strongly acid (pH 5.2); abrupt wavy boundary.

Bw—12 to 29 inches; pale brown (10YR 6/3) very cobbly sandy loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 20 percent gravel, 25 percent cobbles, and 5 percent stones; strongly acid (pH 5.4); clear wavy boundary.

2C—29 to 60 inches; brown (10YR 5/3) extremely cobbly sand, dark brown (10YR 3/3) moist; single grain; loose; 35 percent gravel and 40 percent cobbles; neutral (pH 6.6).

Thickness of volcanic ash influence: 2 to 12 inches

Depth to 2C horizon: 20 to 40 inches

Particle-size control section: Averages 5 to 15 percent clay in the upper part and 0 to 5 percent in the lower part and 35 to 80 percent rock fragments

Reaction: Strongly acid or moderately acid throughout

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Content of clay—5 to 10 percent

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly sandy loam or extremely cobbly sandy loam

Content of clay—5 to 15 percent

2C horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—extremely cobbly sand or extremely cobbly loamy sand

Content of clay—0 to 5 percent

Dystroxerepts

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terrace escarpments

Parent material: Glacial outwash with an influence of volcanic ash in the upper part

Slope range: 45 to 70 percent

Elevation: 1,900 to 2,700 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 45 to 47 degrees F

Frost-free period: 70 to 100 days

Taxonomic classification: Dystroxerepts

Typical pedon of Dystroxerepts ashy sandy loam in Kittitas County, Washington, about 2 miles southwest of Roslyn; 1,400 feet south and 1,350 feet west of the northeast corner of section 30, T. 20 N., R. 15 E.; latitude 47 degrees 12 minutes 4 seconds north and longitude 121 degrees 0 minutes 42 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed needles and twigs; abrupt smooth boundary.

A—1 to 7 inches; grayish brown (10YR 5/2) ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine roots; many very fine irregular pores; 10 percent gravel; slightly acid (pH 6.4); abrupt wavy boundary.

BA—7 to 18 inches; pale brown (10YR 6/3) gravelly ashy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine roots; common very fine tubular pores; 20 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

2Bw1—18 to 37 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few fine roots; common very fine tubular pores; 30 percent gravel and 10 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.

2Bw2—37 to 47 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; very few fine roots; common very fine tubular pores; 35 percent gravel and 10 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.

2Bw3—47 to 60 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; very few fine roots; common very fine tubular pores; 40 percent gravel and 10 percent cobbles; moderately acid (pH 6.0).

Thickness of volcanic ash influence: 1 to 18 inches

Particle-size control section: Averages 5 to 25 percent clay and 15 to 65 percent rock fragments

Reaction: Moderately acid or slightly acid throughout

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—1 to 3 dry or moist

Texture—ashy sandy loam or very cobbly ashy loam

Content of clay—5 to 10 percent

BA horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—gravelly ashy loam, ashy sandy clay loam, or gravelly ashy sandy loam

Content of clay—5 to 25 percent

2Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry, 3 or 4 moist

Texture—very gravelly sandy loam, very cobbly sandy clay loam, very cobbly loam, or extremely gravelly loamy sand

Content of clay—2 to 25 percent

Elkheights Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes and moraines

Parent material: Loess and alluvium over basal till

Slope range: 3 to 30 percent

Elevation: 1,300 to 3,800 feet

Mean annual precipitation: 15 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 110 to 140 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Ultic Argixerolls

Typical pedon of Elkheights loam ([fig. 2](#)) in Kittitas County, Washington, about 4.5 miles northwest of Thorp; about 2,600 feet east and 2,000 feet south of the northwest corner of section 30, T. 19 N., R. 17 E.; Taneum Canyon, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 6 minutes 36 seconds north and longitude 120 degrees 45 minutes 38 seconds west; NAD 83.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak medium platy structure parting to weak fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine and few coarse roots; many fine irregular pores; moderately acid (pH 5.8); abrupt smooth boundary.

BAt1—8 to 19 inches; brown (10YR 5/3) loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine and medium, and few coarse roots; many very fine and common fine interstitial and tubular pores; few faint clay films lining pores and on faces of peds; 5 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

Bt2—19 to 28 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine tubular and many fine interstitial pores; few faint clay films lining pores and on faces of peds; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt3—28 to 41 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common fine roots; common fine tubular and many fine interstitial pores; common distinct clay films lining pores and on faces of peds; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

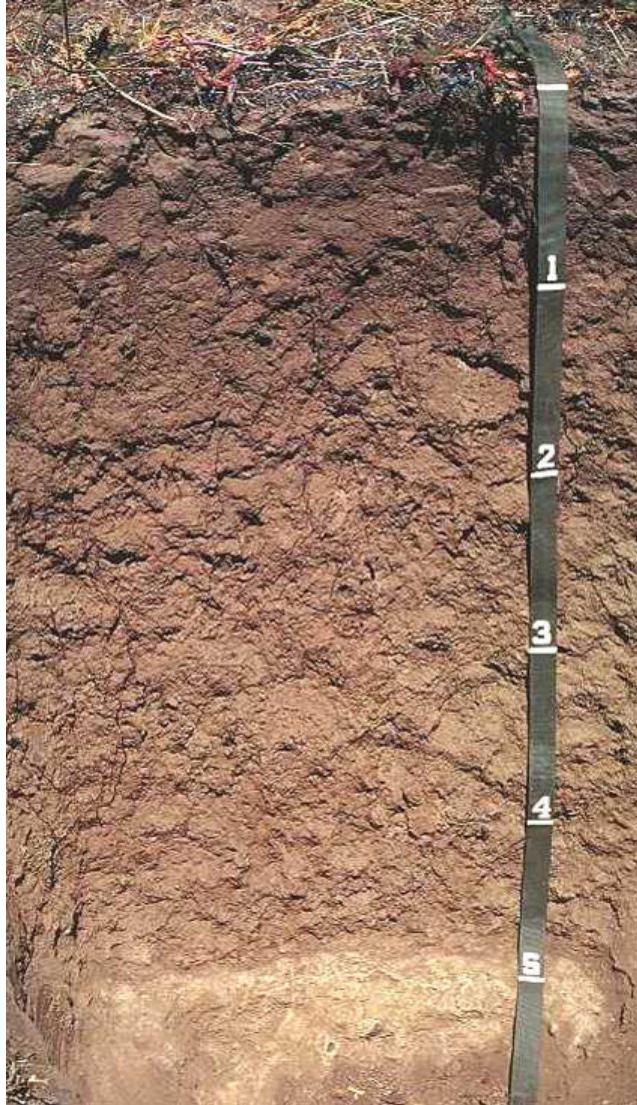


Figure 2.—Typical profile of Elkheights loam. Dense till is at a depth of 56 inches. Scale is in feet.

- 2Bt4—41 to 56 inches; yellowish brown (10YR 5/4) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; few fine roots; many fine interstitial pores; common distinct clay films lining pores and on faces of peds; 25 percent gravel and 5 percent cobbles; neutral (pH 6.8); abrupt wavy boundary.
- 3Cd—56 to 60 inches; brown (10YR 5/3) dense glacial till that breaks to very gravelly sandy clay loam, dark brown (10YR 3/3) moist; massive; extremely hard, extremely firm, slightly sticky and slightly plastic; very few very fine roots; few very fine tubular pores; common black (10YR 2/1) manganese stains throughout; many yellowish brown (10YR 5/8) iron stains throughout; common yellow (10YR 7/6) coatings of silica throughout; 40 percent gravel, 5 percent cobbles, and 2 percent stones; neutral (pH 6.9).

Thickness of mollic epipedon: 15 to 19 inches

Depth to 3Cd horizon: 40 to 60 inches

Particle-size control section: 19 to 25 percent clay and 5 to 15 percent rock fragments

Ap horizon:

Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Content of clay—13 to 15 percent
Reaction—moderately acid to neutral

BAt, Bt2, and Bt3 horizons:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Content of clay—19 to 25 percent
Reaction—slightly acid or neutral

2Bt4 horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—gravelly loam, clay loam, or loam
Content of clay—25 to 30 percent

3Cd horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly sandy clay loam
Content of clay—25 to 35 percent
Reaction—slightly acid or neutral

Ellisforde Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Lake terraces

Parent material: Loess over lacustrine deposits

Slope range: 8 to 15 percent

Elevation: 700 to 740 feet

Mean annual precipitation: 8 to 12 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 135 to 190 days

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Calcic Haploxerolls

Typical pedon of Ellisforde silt loam, 8 to 15 percent slopes, in Chelan County, Washington; about 2,137 feet east and 478 feet south of the northeast corner of section 32, T. 22 N., R. 21 E.; latitude 47 degrees 21 minutes 40 seconds north and longitude 120 degrees 13 minutes 53 seconds west; NAD 83.

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and nonplastic; many roots; few fine pores; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bw1—8 to 16 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and nonplastic; many roots; few fine pores; slightly alkaline (pH 8.0); gradual wavy boundary.

Bw2—16 to 24 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few roots; common fine pores; moderately alkaline (pH 8.2); abrupt wavy boundary.
2Bk—24 to 60 inches; light gray (2.5Y 7/2), dense, thinly laminated silt loam, grayish brown (2.5Y 5/2) moist; massive; hard, firm, slightly sticky and nonplastic; few roots; many very fine interstitial pores; violently effervescent; soft powdery segregations of lime; strongly alkaline (pH 9.0).

Thickness of mollic epipedon: 7 to 16 inches

Particle-size control section: 5 to 18 percent clay

Ap horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—10 to 18 percent

Reaction—neutral or slightly alkaline

Bw1 horizon:

Value—4 to 7 dry, 2 to 5 moist

Chroma—2 to 4 dry or moist

Texture—silt loam or very fine sandy loam

Content of clay—10 to 18 percent

Reaction—neutral or slightly alkaline

Bw2 horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—silt loam or very fine sandy loam

Content of clay—10 to 18 percent

Calcium carbonate equivalent—0 to 5 percent

Reaction—slightly alkaline or moderately alkaline

2Bk horizon:

Hue—10YR, 2.5Y, or 5Y

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 or 3 dry or moist

Texture—stratified very fine sandy loam to silt loam

Content of clay—10 to 18 percent

Calcium carbonate equivalent—1 to 15 percent

Reaction—slightly alkaline or moderately alkaline

Esmeralda Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountainsides

Parent material: Residuum and colluvium derived from gabbro and diabase with an admixture of volcanic ash

Slope range: 10 to 70 percent

Elevation: 3,300 to 7,000 feet

Mean annual precipitation: 50 to 80 inches

Mean annual air temperature: 37 to 41 degrees F

Frost-free period: 60 to 90 days

Taxonomic classification: Ashy-skeletal, amorphic Typic Vitricryands

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Typical pedon of Esmeralda very gravelly ashy loam, bouldery, in Kittitas County, Washington, about 6 miles northeast of Salmon la Sac; 1,500 feet west and 300 feet south of the northeast corner of section 25, T. 23 N., R. 14 E.; latitude 47 degrees 24 minutes 28 seconds north and longitude 121 degrees 3 minutes 48 seconds west; NAD 83.

- Oi—0 to 1 inch; needles, twigs, and partially decomposed litter; medium acid (pH 5.6); abrupt smooth boundary.
- A—1 to 3 inches; brown (10YR 4/3) very gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard; friable, nonsticky and nonplastic; few coarse and common fine and medium roots; few very fine irregular pores; 25 percent angular gravel, 5 percent cobbles, 5 percent stones, and 0.1 percent surface boulders; NaF pH 9.8; moderately acid (pH 5.8); abrupt wavy boundary.
- Bs—3 to 10 inches; yellowish brown (10YR 5/6) very cobbly ashy sandy loam, brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; few very fine irregular pores; 15 percent angular gravel and 20 percent cobbles; NaF pH 11.0; moderately acid (pH 5.6); clear wavy boundary.
- Bw1—10 to 28 inches; brownish yellow (10YR 6/6) very cobbly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; few very fine irregular pores; 20 percent angular gravel and 35 percent cobbles; NaF pH 10.6; moderately acid (pH 5.6); clear wavy boundary.
- Bw2—28 to 44 inches; brownish yellow (10YR 6/6) extremely cobbly ashy sandy loam, dark yellowish brown (10YR 4/6) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine roots; 30 percent angular gravel and 40 percent cobbles; NaF pH 10.1; moderately acid (pH 5.6); clear wavy boundary.
- 2C—44 to 60 inches; yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) extremely cobbly sandy loam, dark yellowish brown (10YR 4/6) moist; structureless; loose, nonsticky and nonplastic; few fine roots; 35 percent angular gravel and 35 percent cobbles; NaF pH 9.4; moderately acid (pH 5.6).

Thickness of volcanic ash influence: 1 to 44 inches

Particle-size control section: 5 to 15 percent clay and 40 to 70 percent rock fragments

Reaction: Strongly acid or moderately acid throughout

A horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—1 to 4 dry or moist

Texture—very gravelly ashy sandy loam or very gravelly ashy loam

Content of clay—5 to 10 percent

Bs horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—very cobbly ashy sandy loam, cobbly ashy sandy loam, or cobbly ashy loam

Content of clay—5 to 15 percent

Bw horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 to 6 dry or moist

Texture—very cobbly ashy sandy loam, extremely cobbly ashy sandy loam, or very cobbly ashy loam

Content of clay—5 to 15 percent

2C horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—2 to 6 dry or moist

Texture—extremely cobbly sandy loam or extremely gravelly sandy loam

Content of clay—5 to 10 percent

Esquatzel Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Flood plains and terraces

Parent material: Alluvium

Slope range: 0 to 5 percent

Elevation: 700 to 2,900 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 130 to 200 days

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Torrifluventic
Haploxerolls

Typical pedon of Esquatzel silt loam in Kittitas County, Washington, about 10 miles southeast of Kittitas; 2,000 feet west and 2,400 feet south of the northeast corner of section 36, T. 16 N., R. 20 E.; Badger Gap, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 49 minutes 54 seconds north and longitude 120 degrees 15 minutes 42 seconds west; NAD 83.

A1—0 to 4 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure parting to weak thick platy; slightly hard, friable, nonsticky and nonplastic; many very fine roots; common fine tubular and very fine vesicular pores; neutral (pH 7.2); clear wavy boundary.

A2—4 to 10 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many fine and common medium roots; common very fine tubular and random vesicular pores; neutral (pH 7.2); clear wavy boundary.

AB—10 to 22 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure; slightly hard, friable, nonsticky and nonplastic; many fine and common medium roots; few very fine tubular pores that are vertical within prisms and few very fine vesicular pores; moderately alkaline (pH 7.9); clear wavy boundary.

Bk1—22 to 31 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores that are vertical within prisms and few very fine vesicular pores that are random within prisms; moderately alkaline (pH 7.9); clear wavy boundary.

Bk2—31 to 40 inches; light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; weak prismatic structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; few aggregates of secondary lime; common very fine random vesicular pores; moderately alkaline (pH 7.9); abrupt smooth boundary.

Bk3—40 to 60 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; weak prismatic structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; few aggregates of secondary lime; common very fine random pores; slightly effervescent; moderately alkaline (pH 7.9).

Thickness of mollic epipedon: 10 to 20 inches

Particle-size control section: 5 to 15 percent clay and 0 to 5 percent rock fragments

A horizon:

Chroma—2 or 3 dry or moist
Content of clay—5 to 15 percent
Reaction—neutral or slightly alkaline

AB, Bk1, and Bk2 horizons:

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam or very fine sandy loam
Content of clay—5 to 15 percent
Calcium carbonate equivalent—1 to 5 percent
Reaction—slightly alkaline or moderately alkaline

Bk3 horizon:

Hue—10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—stratified fine sandy loam to silt loam
Content of clay—5 to 15 percent
Calcium carbonate equivalent—1 to 5 percent
Reaction—slightly alkaline or moderately alkaline

Fluvaquents

Depth class: Very deep
Drainage class: Poorly drained
Position on landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Elevation: 2,200 to 2,500 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 110 to 140 days

Taxonomic classification: Fluvaquents

Typical pedon of Fluvaquents ashy silt loam in Kittitas County, Washington, about 1 mile southwest of Easton Lake; 2,224 feet west and 2,580 feet south of the northeast corner of section 9, T. 20 N., R. 13 E.; latitude 47 degrees 14 minutes 30 seconds north and longitude 121 degrees 13 minutes 34 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed leaves, twigs, and needles; abrupt smooth boundary.

A—1 to 9 inches; dark grayish brown (10YR 4/2) ashy silt loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; soft, firm, nonsticky and nonplastic; few coarse and common very fine and fine roots; common fine tubular pores; moderately acid (pH 5.6); clear smooth boundary.

C1—9 to 18 inches; grayish brown (2.5Y 5/2), stratified very gravelly ashy silt loam with thin lenses of ashy sandy loam, dark grayish brown (2.5Y 4/2) moist; common medium prominent reddish yellow (7.5YR 6/6) redoximorphic concentrations; massive; slightly hard, firm, nonsticky and nonplastic; few very fine and fine roots; few very fine interstitial pores; 40 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

2C2—18 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; common fine prominent yellowish brown (10YR 5/6) rust stains on sand and gravel; single grain, loose; 50 percent gravel; moderately acid (pH 6.0).

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Thickness of volcanic ash influence: 1 to 18 inches

Depth to 2C horizon: 10 to 20 inches

Water table: Present year round

Particle-size control section: Averages 5 to 10 percent clay and 35 to 80 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—10 to 26 percent

Reaction—strongly acid or moderately acid

C1 horizon:

Hue—10YR or 2.5Y

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 or 3 dry or moist

Texture—stratified very gravelly ashy silt loam to ashy sandy loam

Content of clay—5 to 15 percent

Reaction—strongly acid or moderately acid

2C2 horizon:

Hue—10YR or 2.5Y

Value—5 to 7 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly loamy sand or extremely cobbly loamy sand

Content of clay—0 to 15 percent

Reaction—strongly acid or moderately acid

Fortyday Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Hillslopes, structural benches, and plateaus

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 3 to 70 percent

Elevation: 500 to 3,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees

Frost-free period: 135 to 195 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Xeric Haplargids

Typical pedon of Fortyday very cobbly loam in Kittitas County, Washington, about 2 miles north of Vantage; 1,930 feet west and 2,615 feet north of the southeast corner of section 12, T. 17 N., R. 22 E.; latitude 46 degrees 58 minutes 43 seconds north and longitude 120 degrees 0 minutes 53 seconds north; NAD 83.

A—0 to 3 inches; yellowish brown (10YR 5/4) very cobbly loam, dark brown (10YR 3/3) moist; weak medium granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium roots; common fine tubular pores; 25 percent gravel and 20 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

AB—3 to 6 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky

Soil Survey of Kittitas County Area, Washington

and nonplastic; common very fine and fine and few medium roots; few fine tubular pores; 35 percent gravel and 10 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

Bt1—6 to 10 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; few faint colloids and bridges between mineral grains; 15 percent gravel and 40 percent cobbles; moderately alkaline (pH 8.1); clear wavy boundary.

Bt2—10 to 15 inches; brown (7.5YR 4/4) extremely cobbly loam, dark brown (7.5YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine roots; few fine tubular pores; common faint clay films on faces of peds; 15 percent gravel, 55 percent cobbles, and 5 percent stones; moderately alkaline (pH 8.0); abrupt irregular boundary.

2R—15 inches; basalt.

Depth to bedrock: 14 to 20 inches

Particle-size control section: 18 to 25 percent clay and 35 to 80 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 5 dry or moist

Texture—very cobbly loam, cobbly loam, or very stony loam

Content of clay—10 to 15 percent

Reaction—slightly alkaline or moderately alkaline

AB horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly loam or very gravelly loam

Content of clay—10 to 15 percent

Reaction—slightly alkaline or moderately alkaline

Bt horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—extremely gravelly clay loam, extremely cobbly loam, very gravelly loam, or very cobbly loam

Content of clay—18 to 27 percent

Reaction—slightly alkaline or moderately alkaline

Ganis Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Summits of mountains and plateaus

Parent material: Residuum and colluvium derived from basalt with an influence of loess and volcanic ash

Slope range: 7 to 25 percent

Elevation: 4,200 to 6,300 feet

Mean annual precipitation: 22 to 30 inches

Soil Survey of Kittitas County Area, Washington

Mean annual air temperature: 40 to 42 degrees F

Frost-free period: 60 to 95 days

Taxonomic classification: Loamy, isotic Lithic Haplocryolls

Typical pedon of Ganis ashy silt loam in Kittitas County, Washington, about 1 mile northwest of Colockum Pass; 2,200 feet east and 1,150 feet north of the southwest corner of section 23, T. 20 N., R. 20 E.; latitude 47 degrees 12 minutes 28 seconds north and longitude 120 degrees 17 minutes 34 seconds west; NAD 83.

A1—0 to 3 inches; dark brown (10YR 3/3) ashy silt loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 5 percent gravel; NaF pH 8.4; strongly acid (pH 5.4); clear wavy boundary.

A2—3 to 10 inches; dark brown (10YR 4/3) ashy silt loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 5 percent gravel; NaF pH 8.6; strongly acid (pH 5.4); clear wavy boundary.

Bw—10 to 19 inches; yellowish brown (10YR 5/4) gravelly ashy silt loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 20 percent gravel and 10 percent cobbles; NaF pH 9.0; strongly acid (pH 5.4); abrupt wavy boundary.

R—19 inches; fractured basalt.

Thickness of mollic epipedon: 7 to 10 inches

Thickness of volcanic ash influence: 7 to 19 inches

Depth to bedrock: 16 to 20 inches

Particle-size control section: 10 to 18 percent clay and 10 to 30 percent rock fragments

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry

Content of clay—10 to 18 percent

Bw horizon:

Chroma—3 or 4 moist

Texture—gravelly ashy silt loam or cobbly ashy loam

Content of clay—10 to 18 percent

Gilpar Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains

Parent material: Colluvium derived from andesite, pyroclastic rock, schist, and gneiss mixed with volcanic ash

Slope range: 5 to 65 percent

Elevation: 2,200 to 5,500 feet

Mean annual precipitation: 55 to 90 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 35 to 85 days

Taxonomic classification: Ashy-skeletal, amorphic Andic Haplocryods

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Typical pedon of Gilpar ashy sandy loam in Kittitas County, Washington, about 4 miles south of the Keechelus Lake Dam; 3,400 feet south and 600 feet east of the northwest corner of section 2, T. 20 N., R. 12 E.; latitude 47 degrees 16 minutes 0 seconds north and longitude 121 degrees 19 minutes 5 seconds west; NAD 83.

Oe—0 to 2 inches; moderately decomposed forest litter; abrupt wavy boundary.

E—2 to 3 inches; dark grayish brown (10YR 4/2) ashy sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; few fine tubular pores; 10 percent gravel; NaF pH 10.5; moderately acid (pH 5.6); abrupt wavy boundary.

Bs1—3 to 9 inches; brown (7.5YR 5/4) ashy sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; common fine and very fine tubular pores; 10 percent gravel; moderately acid (pH 5.6); clear wavy boundary.

Bs2—9 to 21 inches; brown (7.5YR 5/4) gravelly ashy loam, strong brown (7.5YR 4/6) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common medium and few very fine and fine roots; few very fine irregular pores; 25 percent gravel and 5 percent cobbles; moderately acid (pH 5.6); clear wavy boundary.

Bw—21 to 35 inches; light yellowish brown (10YR 6/4) very cobbly ashy loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine and medium roots; common very fine irregular pores; 10 percent gravel and 45 percent cobbles; moderately acid (pH 5.6); clear smooth boundary.

BC—35 to 60 inches; light yellowish brown (10YR 6/4) very cobbly ashy loam, yellowish brown (10YR 5/4) moist; moderate very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine roots; common very fine irregular pores; 25 percent gravel and 25 percent cobbles; moderately acid (pH 5.6).

Thickness of volcanic ash influence: 26 to 60 inches

Particle-size control section: 5 to 15 percent clay and 35 to 70 percent rock fragments

Reaction: Strongly acid or moderately acid throughout

E horizon:

Value—5 or 6 dry, 3 or 4 moist

Content of clay—5 to 10 percent

Bs horizon:

Hue—7.5YR or 5YR

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 to 6 dry or moist

Texture—ashy sandy loam, gravelly ashy sandy loam, gravelly ashy loam, or very gravelly ashy sandy loam

Content of clay—5 to 10 percent

Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 to 6 moist

Chroma—3 to 6 dry or moist

Texture—very cobbly ashy loam, very gravelly ashy loam, or very channery ashy sandy loam

Content of clay—5 to 15 percent

BC horizon:

Hue—10YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist
Texture—very cobbly ashy loam, very channery ashy sandy loam, or extremely
gravelly ashy sandy loam
Content of clay—5 to 15 percent

Grinrod Series

Depth class: Moderately deep
Drainage class: Well drained
Position on landscape: Shoulders, summits, and backslopes of hills
Parent material: Colluvium and residuum derived from basalt with loess in the upper
part
Slope range: 3 to 60 percent
Elevation: 600 to 2,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 130 to 170 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Aridic Argixerolls

Typical pedon of Grinrod very cobbly loam in Kittitas County, Washington, about 4 miles northeast of Roza Dam; about 2,200 feet east and 1,800 feet south of the northwest corner of section 24, T. 15 N., R. 19 E.; latitude 46 degrees 46 minutes 33 seconds north and longitude 120 degrees 23 minutes 36 seconds west; NAD 83.

A1—0 to 4 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine irregular pores; 20 percent gravel and 25 percent cobbles; neutral (pH 7.0); clear wavy boundary.

A2—4 to 10 inches; dark brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine irregular pores; 30 percent gravel and 10 percent cobbles; neutral (pH 7.0); clear wavy boundary.

Bt1—10 to 19 inches; dark yellowish brown (10YR 4/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate very fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; common faint clay films lining pores and on faces of peds; 40 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—19 to 27 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; common faint clay films lining pores and on faces of peds; 30 percent gravel and 40 percent cobbles; neutral (pH 7.2); abrupt wavy boundary.

R—27 inches; basalt.

Thickness of mollic epipedon: 10 to 16 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 24 to 35 percent clay and 40 to 85 percent rock fragments

Reaction: Neutral throughout

A1 horizon:

Value—4 or 5 dry, 2 or 3 moist

Content of clay—15 to 20 percent

A2 horizon:

Value—4 or 5 dry, 2 or 3 moist

Texture—very gravelly loam or very cobbly loam

Content of clay—15 to 20 percent

Bt horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry

Chroma—3 or 4 dry or moist

Texture—extremely cobbly loam, very gravelly loam, or extremely gravelly clay loam

Content of clay—24 to 35 percent

Hakker Series

Depth class: Deep

Drainage class: Somewhat poorly drained

Position on landscape: Swales and drainageways

Parent material: Colluvium derived from basalt

Slope range: 0 to 15 percent

Elevation: 2,000 to 5,800 feet

Mean annual precipitation: 20 to 35 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 90 to 130 days

Taxonomic classification: Clayey-skeletal, mixed, superactive, frigid Aquultic
Argixerolls

Typical pedon of Hakker clay loam in Kittitas County, Washington, about 1.5 miles east of Virden Junction in First Creek drainageway; 1,330 feet south and 880 feet east of the northwest corner of section 26, T. 20 N., R. 17 E.; latitude 47 degrees 12 minutes 1 second north and longitude 120 degrees 41 minutes 6 seconds west; NAD 83.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) clay loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine irregular pores; slightly acid (pH 6.2); clear smooth boundary.

A2—5 to 15 inches; dark grayish brown (10YR 4/2) clay loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots; common fine tubular pores; slightly acid (pH 6.2); gradual smooth boundary.

A3—15 to 25 inches; dark grayish brown (10YR 4/2) clay loam, very dark brown (10YR 2/2) moist; weak coarse subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; few fine roots; few medium tubular pores; 5 percent cobbles; slightly acid (pH 6.2); gradual wavy boundary.

Bt—25 to 44 inches; brown (10YR 5/3) very cobbly clay, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few faint patchy clay films; few fine roots; few medium tubular pores; 15 percent gravel, 35 percent cobbles, and 5 percent stones; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations and common medium faint dark grayish brown (10YR 4/2) redoximorphic depletions; slightly acid (pH 6.2); abrupt wavy boundary.

2R—44 inches; basalt.

Thickness of mollic epipedon: 20 to 30 inches

Depth to bedrock: 40 to 60 inches

Perched water table: Present some time during the year

Particle-size control section: 40 to 50 percent clay and 35 to 55 percent rock fragments

Reaction: Slightly acid throughout

A horizon:

Value—2 or 3 moist

Chroma—1 or 2 dry or moist

Content of clay—27 to 35 percent

Bt horizon:

Hue—10YR to 5Y

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 or 3 dry, 3 or 4 moist

Content of clay—40 to 50 percent

Haplosaprists

Depth class: Very deep

Drainage class: Poorly drained or very poorly drained

Position on landscape: Basin floors

Parent material: Herbaceous organic material over alluvium

Slope range: 0 to 2 percent

Elevation: 1,900 to 4,200

Mean annual precipitation: 20 to 90 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 100 to 140 days

Taxonomic classification: Haplosaprists

Typical pedon of Haplosaprists muck in Kittitas County, Washington, about 1 mile east of Lake Easton; 1,880 feet west and 1,960 feet south of the northeast corner of section 4, T. 20 N., R. 13 E.; latitude 47 degrees 15 minutes 22 seconds north and longitude 121 degrees 13 minutes 31 seconds west; NAD 83.

Oa1—0 to 8 inches; muck (sapric material) that is black (10YR 2/1) broken face, black (N 2.5/0) rubbed; about 12 percent fiber, less than 5 percent rubbed; moderate medium granular structure; primarily herbaceous fibers; neutral (pH 7.0 in water); abrupt wavy boundary.

Oa2—8 to 20 inches; muck (sapric material) that is black (10YR 2/1) broken face, very dark brown (10YR 2/2) rubbed; about 15 percent fibers, less than 5 percent rubbed; weak coarse subangular blocky structure; primarily herbaceous fibers; slightly acid (pH 6.5 in water); gradual wavy boundary.

Oa3—20 to 43 inches; muck (sapric material) that is black (10YR 2/1) broken face, black (10YR 2/1) rubbed; about 12 percent fibers, less than 5 percent rubbed; weak thick platy structure; primarily herbaceous fibers; moderately acid (pH 6.0 in water); gradual wavy boundary.

2Cg1—43 to 60 inches; light gray (5Y 7/1) silty clay loam, gray (5Y 5/1) moist; common medium prominent light olive brown (2.5Y 5/4) masses of iron oxide accumulation in matrix; massive; extremely hard, firm, moderately sticky and moderately plastic; common fine and medium roots; many very fine and fine tubular pores; neutral (pH 7.0).

Water table: Present year round

Depth to mineral alluvial material: 30 to 60 inches

Oe horizon:

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—muck

Reaction—extremely acid to neutral

2Cg horizon:

Hue—5Y, 10YR, or 2.5Y

Value—2 to 6

Chroma—0 to 4

Texture—silty clay loam, silt loam, or sandy loam

Content of clay—10 to 35 percent

Reaction—moderately acid to neutral

Haploxerolls

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces and small alluvial fans

Parent material: Alluvium

Slope range: 0 to 5 percent

Elevation: 500 to 2,500 feet

Mean annual precipitation: 7 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 180 days

Taxonomic classification: Haploxerolls

Typical pedon of Haploxerolls silt loam in Kittitas County, Washington, about 5 miles northwest of Vantage; about 1,700 feet south and 2,000 feet west of the northeast corner of section 5, T. 17 N., R. 22 E.; Ginkgo, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 59 minutes 43 seconds north and longitude 120 degrees 5 minutes 55 seconds west; NAD 83.

A—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium platy structure parting to moderate fine and medium granular; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; few very fine tubular pores; slightly alkaline (pH 7.4); abrupt smooth boundary.

AC—8 to 17 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; soft, friable, nonsticky and nonplastic; many very fine and few fine and medium roots; common very fine vesicular and dendritic tubular pores; slightly alkaline (pH 7.4); clear wavy boundary.

2C1—17 to 31 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak medium and coarse prismatic structure; slightly hard, firm, nonsticky and nonplastic; common very fine and few medium roots; few very fine vesicular and common medium tubular pores; slightly alkaline (pH 7.8); clear wavy boundary.

2C2—31 to 60 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; slightly hard, firm, nonsticky and nonplastic; few very fine, medium, and coarse roots; many medium tubular pores; 5 percent gravel; slightly alkaline (pH 7.8).

Thickness of mollic epipedon: 10 to 17 inches

Particle-size control section: 5 to 15 percent clay and 2 to 55 percent rock fragments

Depth to the 2C horizon: 15 to 40 inches

Some pedons are calcareous throughout.

A and AC horizons:

Chroma—2 to 4 dry or moist
Content of clay—5 to 15 percent
Sodium adsorption ratio—0 to 5
Electrical conductivity—0 to 4 millimhos per centimeter
Calcium carbonate equivalent—1 to 5 percent
Reaction—slightly alkaline or strongly alkaline

2C horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam, fine sandy loam, very gravelly sandy loam, or gravelly silt loam
Content of clay—5 to 15 percent
Sodium adsorption ratio—0 to 5
Electrical conductivity—0 to 2 millimhos per centimeter
Calcium carbonate equivalent—1 to 5 percent
Reaction—slightly alkaline or moderately alkaline

Hardmauk Series

Depth class: Deep

Drainage class: Moderately well drained

Position on landscape: Mountain slopes

Parent material: Loess over basal till with a minor influence of volcanic ash in the upper part

Slope range: 25 to 50 percent

Elevation: 1,800 to 3,600 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Taxonomic classification: Fine-loamy, mixed, superactive, frigid Aquic Haploxeralfs

Typical pedon of Hardmauk ashy loam, 25 to 50 percent slopes, in Kittitas County, Washington, about 2.5 miles east of Cle Elum; about 2,300 feet east and 2,100 feet north of the southwest corner of section 28, T. 20 N., R. 16 E.; Teanaway, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 11 minutes 43 seconds north and longitude 120 degrees 50 minutes 47 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed and moderately decomposed needles and twigs; abrupt smooth boundary.

A—1 to 5 inches; grayish brown (10YR 5/2) ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine, medium, and very coarse granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few medium roots; many very fine irregular pores; 10 percent gravel; NaF pH 8.0; slightly acid (pH 6.2); abrupt smooth boundary.

BA—5 to 11 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium roots; many very fine irregular pores; 10 percent gravel; NaF pH 8.0; slightly acid (pH 6.2); clear wavy boundary.

E1—11 to 20 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and coarse and few fine roots; many

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- very fine irregular and common very fine and fine tubular pores; 10 percent gravel; NaF pH 7.8; slightly acid (pH 6.2); clear wavy boundary.
- E2—20 to 29 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common coarse and few fine roots; many very fine irregular and common very fine tubular pores; 15 percent gravel and 5 percent cobbles; NaF pH 7.8; slightly acid (pH 6.2); abrupt irregular boundary.
- Bt/E1—29 to 35 inches; about 80 percent (Bt part) pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; very hard, firm, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common prominent brown (7.5YR 4/4) clay films on vertical faces of peds and in pores; few faint skeletons on faces of peds; about 20 percent (E part) pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; slightly hard, friable, slightly sticky and slightly plastic; common very coarse and few fine roots; many very fine irregular and common very fine tubular pores; common tongues that are light gray (10YR 7/2) and 10 to 25 millimeters wide on vertical faces of prisms; 15 percent gravel and 5 percent cobbles; NaF pH 7.8; slightly acid (pH 6.4); clear wavy boundary.
- Bt/E2—35 to 38 inches; about 60 percent (Bt part) pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; very hard, firm, sticky and plastic; few fine roots; few fine tubular pores; common prominent brown (7.5YR 4/4) clay films on vertical faces of peds and in pores; few faint skeletons on faces of peds; about 40 percent (E part) pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; slightly hard, friable, slightly sticky and slightly plastic; common very coarse and few fine roots; many very fine irregular and common very fine tubular pores; common tongues that are light gray (10YR 7/2) and 10 to 25 millimeters wide on vertical faces of prisms; 15 percent gravel and 5 percent cobbles; NaF pH 7.8; slightly acid (pH 6.4); abrupt wavy boundary.
- 2Btb—38 to 50 inches; pale brown (10YR 6/3), dense gravelly sandy clay loam, brown (10YR 4/3) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few coarse roots in seams; few very fine tubular pores; many prominent brown (7.5YR 4/4) clay films in horizontal and vertical seams; few faint iron-manganese stains in seams; few tongues that are light gray (10YR 7/2) and 5 to 20 millimeters wide in vertical seams; 20 percent gravel and 5 percent cobbles; NaF pH 7.8; neutral (pH 6.6); clear wavy boundary.
- 2Cdt—50 to 60 inches; very pale brown (10YR 7/3) dense glacial till that breaks to very gravelly sandy clay loam, grayish brown (10YR 5/2) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few very fine tubular pores; common distinct brown (7.5YR 4/4) clay films in seams; common distinct iron-manganese stains in seams; 30 percent gravel and 15 percent cobbles; NaF pH 7.8; neutral (pH 6.8).

Thickness of volcanic ash influence: 3 to 5 inches

Perched water table: Present some time during the year

Depth to the 2Cdt horizon: 45 to 60 inches

Particle-size control section: Averages 20 to 35 percent clay and 5 to 35 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Content of clay—11 to 13 percent

Reaction—moderately acid to neutral

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BA horizon:

Chroma—3 or 4 dry or moist
Texture—loam, gravelly loam, or gravelly sandy loam
Content of clay—11 to 13 percent
Reaction—moderately acid or slightly acid

E horizon:

Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—loam, gravelly loam, or gravelly sandy loam
Content of clay—11 to 13 percent
Reaction—moderately acid or slightly acid

Bt/E horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—gravelly clay loam or gravelly sandy clay loam
Content of clay—20 to 30 percent
Reaction—moderately acid or slightly acid

2Btb horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—gravelly sandy clay loam, very gravelly sandy clay, or very gravelly sandy clay loam
Content of clay—29 to 40 percent
Reaction—slightly acid or neutral

2Cdt horizon:

Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly sandy clay loam, very gravelly sandy clay, or extremely gravelly sandy clay
Content of clay—29 to 40 percent
Reaction—slightly acid or neutral

Haywire Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains

Parent material: Volcanic ash and pumice overlying residuum and colluvium derived from extrusive igneous rock

Slope range: 0 to 60 percent

Elevation: 3,400 to 5,500 feet

Mean annual precipitation: 80 to 120 inches

Mean annual air temperature: 37 to 40 degrees F

Frost-free period: 40 to 80 days

Taxonomic classification: Medial-skeletal over loamy-skeletal, amorphic over isotic Andic Humicryods

Typical pedon of Haywire ashy sandy loam in Kittitas County, Washington, about 3 miles south of Tacoma Pass; 1,565 feet west and 185 feet north of the southeast corner of section 6, T. 19 N., R. 13 E., latitude 47 degrees 9 minutes 24 seconds north and longitude 121 degrees 15 minutes 54 seconds west; NAD 83.

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- Oe—0 to 1 inch; moderately decomposed organic litter; common fine, medium, and coarse roots; abrupt smooth boundary.
- E—1 to 3 inches; very dark gray (10YR 3/1) ashy sandy loam, gray (10YR 5/1) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine, fine, and medium roots; very strongly acid (pH 5.0); abrupt smooth boundary.
- Bhs—3 to 6 inches; dusky red (2.5YR 3/2) medial loam, dark reddish brown (5YR 3/4) dry; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; many very fine, fine, and medium and common coarse roots; 5 percent gravel; very strongly acid (pH 4.9); clear irregular boundary.
- Bs1—6 to 10 inches; dark reddish brown (2.5YR 3/4) medial loam, dark brown (7.5YR 3/4) dry; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; many very fine, fine, and medium and common coarse roots; 10 percent gravel; very strongly acid (pH 5.0); clear irregular boundary.
- Bs2—10 to 18 inches; dark reddish brown (5YR 3/4) gravelly medial loam, brown (7.5YR 4/4) dry; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; common very fine and many fine and medium roots; 20 percent gravel and 5 percent cobbles; strongly acid (pH 5.2); clear irregular boundary.
- Bs3—18 to 26 inches; dark brown (7.5YR 3/4) very cobbly medial loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; common fine and medium roots; 25 percent gravel, 25 percent cobbles, and 5 percent stones; strongly acid (pH 5.2); clear smooth boundary.
- 2BC1—26 to 29 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, light yellowish brown (10YR 6/4) dry; massive; soft, friable, slightly sticky and slightly plastic; 35 percent gravel, 25 percent cobbles, and 10 percent stones; strongly acid (pH 5.4); clear smooth boundary.
- 2BC2—29 to 38 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, light yellowish brown (10YR 6/4) dry; massive; soft, friable, slightly sticky and slightly plastic; 40 percent gravel, 20 percent cobbles, and 10 percent stones; moderately acid (pH 5.6); abrupt smooth boundary.
- 2R—38 inches; fractured andesite.

Thickness of volcanic ash influence: 15 to 30 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 35 to 70 percent rock fragments that are dominantly volcanic ash in the upper part and 35 to 85 percent rock fragments in the lower part

E horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 2 to 4 moist

Chroma—1 or 2 dry or moist

Content of clay—5 to 10 percent

Bhs horizon:

Hue—10YR, 7.5YR, 5YR, or 2.5YR

Value—3 to 5 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—medial loam, gravelly medial loam, or gravelly medial sandy loam

Content of clay—5 to 15 percent

Reaction—very strongly acid or moderately acid

Bs1 horizon:

Hue—10YR, 7.5YR, or 5YR

Value—3 to 6 dry, 3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—gravelly medial loam, gravelly medial sandy loam, or medial loam

Content of clay—5 to 15 percent

Reaction—very strongly acid or moderately acid

Bs2 and Bs3 horizons:

Hue—10YR, 7.5YR, or 5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—very cobbly medial loam or very gravelly medial loam

Content of clay—5 to 15 percent

Reaction—very strongly acid or moderately acid

2BC horizon:

Hue—10YR, 7.5YR, or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—4 to 6 dry or moist

Texture—extremely cobbly loam, extremely gravelly loam, or very gravelly silt loam

Content of clay—5 to 15 percent

Reaction—strongly acid or moderately acid

Horseflat Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Hillslopes and canyons

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 15 to 75 percent

Elevation: 600 to 2,500 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 100 to 170 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Argixerolls

Typical pedon of Horseflat very cobbly loam in an area of rangeland on a 38-percent, north-facing slope at an elevation of 2,000 feet in Kittitas County, Washington; about 1,200 feet south and 2,900 feet east of the northwest corner of section 31, T. 16 N., R. 23 E.; Beverly, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 50 minutes 14 seconds north and longitude 119 degrees 59 minutes 22 seconds west; NAD 83.

A—0 to 4 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; soft, friable, nonsticky and nonplastic; many very fine roots; few very fine irregular pores; 20 percent gravel and 25 percent cobbles; slightly alkaline (pH 7.4); clear smooth boundary.

AB—4 to 9 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine irregular pores; 30 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.4); clear wavy boundary.

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Bt—9 to 16 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; common distinct clay films on faces of peds; 50 percent gravel and 15 percent cobbles; slightly alkaline (pH 7.4); abrupt irregular boundary.

R—16 inches; basalt; silica coatings on 30 percent of surface area.

Thickness of mollic epipedon: 7 to 16 inches

Depth to bedrock: 12 to 20 inches

Particle-size control section: 23 to 33 percent clay and 35 to 65 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 25 percent

AB horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly loam, very gravelly clay loam, or very cobbly loam

Content of clay—15 to 27 percent

Bt horizon:

Hue—10YR or 7.5YR

Value—3 to 6 dry

Chroma—2 to 4 dry or moist

Texture—extremely gravelly loam, extremely cobbly loam, or very cobbly clay loam

Content of clay—23 to 33 percent

Jimek Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Summits and backslopes of mountains

Parent material: Colluvium derived from rhyolite, tuff, and volcanic ash

Slope range: 5 to 60 percent

Elevation: 3,300 to 6,300 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 38 to 41 degrees F

Frost-free period: 40 to 75 days

Taxonomic classification: Ashy-skeletal, amorphic Typic Vitricryands

Typical pedon of Jimek gravelly ashy sandy loam on a 35-percent, northwest-facing slope in Kittitas County, Washington, about 9 miles south of Easton; 2,200 feet north and 1,500 feet east of the southwest corner of section 25, T. 19 N., R. 13 E.; Mount Clifty, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 6 minutes 14 seconds north and longitude 120 degrees 10 minutes 0 seconds west; NAD 83.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many very fine irregular pores; 25 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

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A2—3 to 6 inches; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine irregular pores; 25 percent gravel; NaF pH 9.8; moderately acid (pH 5.8); abrupt smooth boundary.

BA—6 to 10 inches; dark yellowish brown (10YR 4/4) very cobbly ashy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine and fine irregular pores; 25 percent gravel and 25 percent cobbles; NaF pH 11.8; moderately acid (pH 5.6); clear wavy boundary.

Bw—10 to 25 inches; yellowish brown (10YR 5/6) extremely cobbly ashy loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine and fine irregular pores; 35 percent gravel and 35 percent cobbles; NaF pH 12.0; strongly acid (pH 5.4); clear wavy boundary.

BC—25 to 38 inches; strong brown (7.5YR 5/6) extremely cobbly ashy sandy loam, strong brown (7.5YR 4/6) moist; massive; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine roots; common very fine and fine irregular pores; 40 percent gravel and 45 percent cobbles; NaF pH 11.8; strongly acid (pH 5.4); clear smooth boundary.

R—38 inches; unweathered, fractured rhyolite.

Thickness of volcanic ash influence: 20 to 40 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 5 to 15 percent clay and averages 35 to 65 percent rock fragments

A horizon:

Value—3 or 4 dry, 4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 10 percent

BA horizon:

Chroma—3 or 4 moist

Texture—very cobbly ashy loam or very gravelly ashy loam

Content of clay—7 to 15 percent

Bw horizon:

Hue—10YR or 7.5YR

Chroma—4 to 6 dry

Content of clay—7 to 15 percent

Reaction—strongly acid or moderately acid

BC horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—4 or 6 moist

Content of clay—5 to 10 percent

Jummer Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from basalt with loess and a minor amount of volcanic ash in the upper part

Slope range: 45 to 60 percent

Elevation: 2,610 to 5,100 feet

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Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Vitrandic Haploxerafls

Typical pedon of Jummer very gravelly ashy sandy loam in Kittitas County, Washington, about 3.5 miles north of Lakedale; about 1,300 feet east and 300 feet north of the southwest corner of section 15, T. 21 N., R. 14 E.; Cle Elum Lake, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 18 minutes 17 seconds north and longitude 121 degrees 4 minutes 39 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed and moderately decomposed needles and twigs; abrupt smooth boundary.

A—1 to 4 inches; brown (10YR 4/3) very gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine irregular pores; 35 percent gravel and 5 percent cobbles; NaF pH 9.0; moderately acid (pH 5.9); abrupt smooth boundary.

Bw1—4 to 7 inches; brown (7.5YR 4/3) gravelly ashy sandy loam, dark brown (7.5YR 3/3) moist; weak very fine and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine irregular pores; 30 percent gravel; NaF pH 9.0; moderately acid (pH 5.8); clear wavy boundary.

Bw2—7 to 21 inches; brown (7.5YR 5/4) moist; very gravelly ashy sandy loam, dark brown (7.5YR 3/4); weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine irregular pores; 35 percent gravel and 5 percent cobbles; NaF pH 9.0; moderately acid (pH 5.8); clear wavy boundary.

2Bt—21 to 34 inches; brown (7.5YR 5/4) extremely gravelly loam, dark brown (7.5YR 3/4) moist; soft, very friable, slightly sticky and slightly plastic; few coarse and very fine roots; many very fine irregular pores; few faint clay films and bridges in pores; 40 percent gravel and 20 percent cobbles; NaF pH 8.4; moderately acid (pH 5.8); abrupt wavy boundary.

3R—34 inches; fractured Teanaway basalt.

Thickness of volcanic ash influence: 10 to 22 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 15 to 26 percent clay and 60 to 75 percent rock fragments

Reaction: Strongly acid or moderately acid throughout

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry

Chroma—2 to 4 dry or moist

Content of clay—5 to 10 percent

Reaction—slightly alkaline or moderately alkaline

Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry, 3 or 4 moist

Texture—very gravelly ashy sandy loam, gravelly ashy sandy loam, or gravelly ashy loam

Content of clay—5 to 10 percent

Reaction—slightly alkaline or moderately alkaline

2Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—extremely cobbly sandy loam or extremely gravelly loam

Content of clay—15 to 26 percent

Reaction—slightly alkaline or moderately alkaline

Jumpe Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Summits, shoulders, and backslopes of mountains

Parent material: Residuum and colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 5 to 65 percent

Elevation: 2,200 to 5,800 feet

Mean annual precipitation: 18 to 45 percent

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 120 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Vitrandic Haploxerepts

Typical pedon of Jumpe stony ashy loam in Kittitas County, Washington, about 4.5 miles southwest of Colockum Pass; 2,400 feet east and 1,500 feet north of the southwest corner of section 31, T. 20 N., R. 20 E.; Naneum Canyon, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 10 minutes 48 seconds north and longitude 120 degrees 22 minutes 38 seconds west; NAD 83.

Oe—0 to 2 inches; partially decomposed forest litter.

A—2 to 4 inches; brown (10YR 5/3) stony ashy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and medium roots; many fine irregular pores; 10 percent angular gravel, 10 percent angular cobbles, and 5 percent surface stones; NaF pH 8.8; moderately acid (pH 6.0); abrupt smooth boundary.

Bw1—4 to 12 inches; yellowish brown (10YR 5/4) cobbly ashy loam, dark yellowish brown (10YR 4/4) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; many fine tubular pores; 10 percent angular gravel and 20 percent angular cobbles; NaF pH 8.5; slightly acid (pH 6.2); abrupt smooth boundary.

Bw2—12 to 28 inches; yellowish brown (10YR 5/4) very cobbly ashy loam, brown (7.5YR 4/4) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common fine and medium roots; many fine tubular pores; 25 percent angular gravel and 25 percent angular cobbles; NaF pH 8.8; slightly acid (pH 6.2); clear smooth boundary.

2BC—28 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; hard, firm, slightly sticky and slightly plastic; common fine and medium roots; many coarse irregular pores; 20 percent angular gravel and 50 percent angular cobbles; slightly acid (pH 6.2).

Thickness of volcanic ash influence: 25 to 45 inches

Particle-size control section: 15 to 27 percent clay and 35 to 70 percent rock fragments

Reaction: Moderately acid or slightly acid throughout

A horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 to 5 moist

Chroma—1 to 3 dry or moist

Content of clay—8 to 15 percent

Bw horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly ashy loam, very cobbly ashy silt loam, or extremely cobbly ashy loam

Content of clay—10 to 24 percent

2BC horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—extremely cobbly loam, very cobbly silt loam, or very cobbly loam

Content of clay—8 to 15 percent

Jumpmore Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountainsides

Parent material: Residuum and colluvium derived from basalt and a minor amount of volcanic ash

Slope range: 30 to 65 percent

Elevation: 2,400 to 5,200 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 65 to 110 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Vitrandic Palexeralfs

Typical pedon of Jumpmore gravelly ashy loam, stony surface, in Kittitas County, Washington, about 11 miles northeast of Cle Elum; 1,200 feet west and 1,000 feet north of the southeast corner of section 27, T. 22 N., R. 16 E. latitude 47 degrees 21 minutes 50 seconds north and longitude 120 degrees 48 minutes and 15 seconds west; NAD 83.

Oe—0 to 1 inch; moderately decomposed forest litter; abrupt smooth boundary.

A—1 to 5 inches; grayish brown (10YR 5/2) gravelly ashy loam, stony surface, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; 20 percent gravel and 0.1 percent surface stones; NaF pH 8.6; moderately acid (pH 5.8); abrupt wavy boundary.

Bw1—5 to 14 inches; brown (10YR 5/3) cobbly ashy loam, dark brown (7.5YR 3/4) moist; moderate very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine irregular pores; 15 percent gravel and 10 percent cobbles; NaF pH 8.6; moderately acid (pH 5.8); clear wavy boundary.

2Bw2—14 to 30 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium

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roots; many very fine irregular pores; 25 percent gravel and 20 percent cobbles; NaF pH 8.0; strongly acid (pH 5.5); clear wavy boundary.

2Bt—30 to 60 inches; strong brown (7.5YR 5/6) very cobbly loam, strong brown (7.5YR 4/6) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular pores; common faint clay bridges and brown (7.5YR 4/4) clay films in pores; 25 percent gravel and 25 percent cobbles; NaF pH 8.4; strongly acid (pH 5.5).

Percentage of surface covered with stones: 0.01 to 0.1 percent

Thickness of volcanic ash influence: 10 to 22 inches

Particle-size control section: 18 to 29 percent clay and 40 to 75 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Content of clay—10 to 14 percent

Reaction—strongly acid or moderately acid

Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 to 6 dry, 3 or 4 moist

Texture—cobbly ashy loam, gravelly ashy loam, very cobbly ashy loam, or very gravelly ashy loam

Content of clay—10 to 14 percent

Reaction—strongly acid or moderately acid

2Bw2 horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 to 6 dry, 3 or 4 moist

Texture—very gravelly loam, very cobbly loam, or very gravelly sandy loam

Content of clay—10 to 14 percent

Reaction—strongly acid or moderately acid

2Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry

Chroma—4 to 6 dry or moist

Texture—very cobbly loam, very gravelly clay loam, extremely gravelly loam, or extremely gravelly sandy clay loam

Content of clay—18 to 29 percent

Reaction—strongly acid or moderately acid

Kachess Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Glacial valley floors and till plains

Parent material: Ablation till over glacial fluvial deposits with volcanic ash in the upper part

Slope range: 5 to 25 percent

Elevation: 2,100 to 3,500 feet

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Mean annual precipitation: 50 to 80 inches

Mean annual air temperature: 38 to 43 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Ashy-skeletal, amorphic Andic Haplocryods

Typical pedon of Kachess gravelly ashy sandy loam in Kittitas County, Washington, about 2 miles east of Keechelus Dam; 1,500 feet west and 2,250 feet south of the northeast corner of section 14, T. 21 N., R 12 E.; latitude 47 degrees 11 minutes 46 seconds north and longitude 120 degrees 35 minutes 9 seconds west; NAD 83.

Oi—0 to 2 inches; slightly decomposed forest litter; abrupt smooth boundary.

E—2 to 3 inches; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, light gray (10YR 6/1) dry; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; 15 percent gravel; strongly acid (pH 5.2); abrupt smooth boundary.

Bs—3 to 5 inches; dark brown (7.5YR 3/4) gravelly ashy sandy loam, brown (7.5YR 5/4) and dark brown (7.5YR 4/4) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; 15 percent gravel; NaF pH 12.0; moderately acid (pH 5.6); abrupt smooth boundary.

Bw1—5 to 10 inches; dark yellowish brown (10YR 3/4) gravelly ashy sandy loam, yellowish brown (10YR 5/4) dry; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; weakly smeary; common fine and medium and few coarse roots; 25 percent gravel; NaF pH 12.0; moderately acid (pH 6.0); gradual wavy boundary.

Bw2—10 to 21 inches; dark brown (7.5YR 3/4) very gravelly ashy loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common very fine and fine roots; 35 percent gravel and 10 percent cobbles; NaF pH 12.0; slightly acid (pH 6.2); gradual wavy boundary.

Bw3—21 to 30 inches; dark yellowish brown (10YR 3/4) very cobbly ashy loam, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; few very fine roots; 25 percent gravel and 25 percent cobbles; NaF pH 12.0; moderately acid (pH 6.0); clear wavy boundary.

2C1—30 to 39 inches; light olive brown (2.5Y 5/4) extremely gravelly ashy sandy loam, olive brown (2.5Y 4/4) moist; massive in place, single grain when disturbed; loose, nonsticky and nonplastic; weakly smeary; few very fine roots; 50 percent gravel and 20 percent cobbles; NaF pH 10.0; moderately acid (pH 6.0); clear wavy boundary.

3C2—39 to 62 inches; light olive brown (2.5Y 5/4) extremely gravelly loamy sand, olive brown (2.5Y 4/4) moist; massive in place, single grain when disturbed; loose, nonsticky and nonplastic; 55 percent gravel and 25 percent cobbles; NaF pH 10.0; moderately acid (pH 5.8).

Thickness of andic properties—26 to 38 inches

Particle-size control section: 7 to 15 percent clay and 35 to 80 percent rock fragments

E horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—1 or 2 dry

Content of clay—5 to 10 percent

Reaction—very strongly acid or strongly acid

Bs horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

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Chroma—4 to 6 dry

Texture—gravelly ashy sandy loam

Content of volcanic ash—30 to 60 percent

Content of clay—5 to 10 percent

Content of rock fragments—15 to 25 percent total, with 15 to 20 percent gravel and 0 to 5 percent cobbles

Reaction—strongly acid or moderately acid

Bw horizon:

Value—3 or 4 moist

Chroma—4 to 6 dry

Texture—gravelly ashy sandy loam

Content of clay—5 to 10 percent

Reaction—strongly acid or moderately acid

Bw2 and Bw3 horizons:

Hue—7.5YR or 10YR

Texture—very gravelly ashy loam or very cobbly ashy loam

Content of clay—7 to 15 percent

Reaction—strongly acid or slightly acid

2C and 3C horizons:

Hue—2.5YR or 10YR

Texture—extremely cobbly ashy loam, extremely gravelly ashy loam, or extremely gravelly loamy sand

Content of clay—0 to 10 percent

Reaction—strongly acid or moderately acid

Kafing Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from sandstone and siltstone with an influence of volcanic ash in the upper part

Slope range: 30 to 60 percent

Elevation: 2,400 to 5,400 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees

Frost-free period: 80 to 120 days

Taxonomic classification: Fine-loamy, isotic, frigid Vitrandic Dystroxerepts

Typical pedon of Kafing ashy sandy loam in Kittitas County, Washington, about 3 miles north of Liberty; 2,150 feet west and 1,100 feet north of the southeast corner of section 23, T. 21 N., R. 17 E.; latitude 47 degrees 17 minutes 31 seconds north and longitude 120 degrees 40 minutes 31 seconds west; NAD 83.

Oi—0 to 2 inches; duff and litter; abrupt smooth boundary.

A—2 to 6 inches; pale brown (10YR 6/3) ashy sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; few very fine tubular pores; 10 percent soft sandstone and siltstone paragravel; NaF pH 8.5; moderately acid (pH 6.0); clear wavy boundary.

AB—6 to 13 inches; pale brown (10YR 6/3) paragravelly ashy loam, brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; few very

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fine tubular pores; 30 percent sandstone and siltstone paragravel; NaF pH 8.5; moderately acid (pH 6.0); abrupt wavy boundary.

Bw—13 to 24 inches; light yellowish brown (2.5Y 6/4) paragravelly clay loam, olive brown (2.5Y 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine tubular pores; 5 percent sandstone gravel, 20 percent sandstone and siltstone paragravel, and 5 percent sandstone and siltstone paracobbles; moderately acid (pH 5.8); abrupt wavy boundary.

BC—24 to 41 inches; pale yellow (2.5Y 7/4) very paragravelly clay loam, light olive brown (2.5Y 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 10 percent sandstone gravel, 20 percent siltstone paragravel, and 10 percent siltstone paracobbles; moderately acid (pH 5.8); clear wavy boundary.

C—41 to 62 inches; pale yellow (2.5Y 7/4) paracobbly silty clay loam, light olive brown (2.5Y 5/4) moist; massive; hard, firm, moderately sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 10 percent hard siltstone paragravel, 10 percent soft siltstone paragravel, and 10 percent siltstone paracobbles; moderately acid (pH 5.8).

Thickness of volcanic ash influence: 8 to 14 inches

Particle-size control section: 27 to 35 percent clay and averages 0 to 15 percent rock fragments and 15 to 40 percent pararock fragments

A horizon:

Content of clay—5 to 10 percent

Content of rock fragments—0 to 10 percent gravel

Reaction—moderately acid or slightly acid

AB horizon:

Chroma—3 or 4 moist

Texture—paragravelly ashy loam or paragravelly ashy clay loam

Content of clay—15 to 30 percent

Reaction—moderately acid or slightly acid

Bw horizon:

Hue—10YR

Value—4 or 5 moist

Texture—paragravelly clay loam, paragravelly silty clay loam, very paragravelly clay loam, or very paragravelly silty clay loam

Content of clay—27 to 35 percent paracobbles

BC and C horizons:

Value—6 or 7 dry, 4 or 5 moist

Texture—paragravelly silty clay loam, paragravelly clay loam, very paragravelly clay loam, paracobbly silty clay loam, or very paragravelly silty clay loam

Content of clay—27 to 35 percent

Kaner Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains

Parent material: Colluvium and residuum derived from gneiss, phyllite, and diorite with a mixture of volcanic ash

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Slope range: 30 to 60 percent

Elevation: 3,600 to 6,200 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 75 days

Taxonomic classification: Ashy-skeletal over loamy-skeletal, amorphic over isotic
Humic Vitricryands

Typical pedon of Kaner very gravelly ashy loam in Kittitas County, Washington, about 1 mile northwest of Quartz Mountain; 1,025 feet east and 30 feet north of the southwest corner of section 34, T. 19 N., R. 14 E.; Quartz Mountain, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 5 minutes 1 second north and longitude 121 degrees 5 minutes 14 seconds west; NAD 83.

Oi—0 to 1 inch; forest litter; abrupt smooth boundary.

A1—1 to 4 inches; very dark grayish brown (10YR 3/2) very gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine irregular pores; 40 percent gravel; NaF pH 9.2; strongly acid (pH 5.4); abrupt smooth boundary.

A2—4 to 12 inches; dark brown (10YR 3/3) very gravelly ashy loam, very dark brown (10YR 2/2) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine roots; many very fine and fine irregular pores; 40 percent gravel; NaF pH 10.6; strongly acid (pH 5.4); clear wavy boundary.

AB—12 to 23 inches; dark brown (10YR 3/3) very gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic, weakly smeary; common very fine and fine and fine medium roots; many very fine and fine irregular pores; 40 percent gravel; NaF pH 11.6; strongly acid (pH 5.4); clear wavy boundary.

Bw—23 to 36 inches; brown (10YR 4/3) extremely gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine roots; many very fine irregular pores; 70 percent gravel; NaF pH 12.0; strongly acid (pH 5.2); abrupt wavy boundary.

2BC—36 to 60 inches; olive brown (2.5Y 4/4) extremely gravelly loam, very dark grayish brown (2.5Y 3/2) moist; massive; soft, very friable, nonsticky and slightly plastic; weakly smeary; few fine roots; common very fine irregular pores; 70 percent gravel; NaF pH 12.0; strongly acid (pH 5.2).

Thickness of umbric epipedon: 20 to 35 inches

Thickness of volcanic ash influence: 20 to 40 inches

Particle-size control section: Averages 7 to 15 percent clay and 40 to 80 percent rock fragments

Reaction: Strongly acid throughout

A1 horizon:

Chroma—2 or 3 dry

Content of clay—7 to 13 percent

A2 horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 moist

Texture—very gravelly ashy loam or gravelly ashy sandy loam

Content of clay—7 to 15 percent

AB horizon:

Value—3 or 4 dry

Chroma—2 or 3 moist

Content of clay—7 to 15 percent

Bw horizon:

Value—4 or 5 dry

Chroma—3 or 4 dry, 2 to 4 moist

Texture—extremely gravelly ashy loam or very gravelly ashy loam

Content of clay—7 to 15 percent

2BC horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—4 to 6 dry, 2 or 4 moist

Content of clay—7 to 15 percent

Kayak Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Flood plains

Parent material: Alluvium

Slope range: 0 to 2 percent

Elevation: 500 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Aquandic Endoaquolls

Typical pedon of Kayak gravelly ashy loam in Kittitas County, Washington, about 5 miles southwest of Kittitas; about 2,300 feet west and 150 feet south of the northeast corner of section 31, T. 17 N., R. 19 E.; latitude 46 degrees 55 minutes 33 seconds north and longitude 120 degrees 30 minutes 24 seconds west; NAD 83.

Ap—0 to 6 inches; grayish brown (10YR 5/2) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; hard, very friable, nonsticky and slightly plastic; many very fine and fine roots; 25 percent gravel; NaF pH 9.5; slightly alkaline (pH 7.6); abrupt smooth boundary.

A—6 to 17 inches; grayish brown (10YR 5/2) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 5 percent gravel; NaF pH 9.5; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bw1—17 to 29 inches; brown (10YR 5/3) ashy fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common fine roots; common fine prominent strong brown (7.5YR 5/8) iron accumulations; 10 percent gravel; NaF pH 8.0; slightly alkaline (pH 7.6); clear wavy boundary.

Bw2—29 to 39 inches; brown (10YR 5/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; many fine prominent strong brown (7.5YR 5/8) iron accumulations; 10 percent gravel; neutral (pH 7.2); gradual irregular boundary.

2C—39 to 60 inches; grayish brown (2.5Y 5/2) extremely gravelly sand, dark gray (5Y 4/1) moist; single grain; loose, nonsticky and nonplastic; 50 percent gravel and 20 percent cobbles; neutral (pH 7.2).

Soil Survey of Kittitas County Area, Washington

Thickness of mollic epipedon: 20 to 40 inches

Thickness of volcanic ash influence: 10 to 20 inches

Irrigation-induced water table: Present some time during the irrigation season

Depth to sandy gravelly material: 20 to 40 inches

Particle-size control section: 18 to 25 percent clay and 5 to 25 percent rock fragments in the upper part and 0 to 2 percent clay and 50 to 75 percent rock fragments in the lower part

Ap horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam, gravelly ashy loam, or ashy sandy loam

Content of clay—18 to 25 percent

Reaction—slightly acid to slightly alkaline

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or gravelly ashy loam

Content of clay—18 to 25 percent

Rock fragments—0 to 15 percent gravel and 0 to 5 percent cobbles

Reaction—neutral or slightly alkaline

Bw horizon:

Value—4 or 5 moist

Chroma—2 or 3 dry or moist

Texture—ashy fine sandy loam, ashy sandy clay loam, or gravelly ashy sandy loam in the upper part and fine sandy loam, sandy clay loam, or gravelly sandy loam in the lower part

Content of clay—18 to 25 percent

Reaction—neutral or slightly alkaline

2C horizon:

Hue—2.5Y or 5Y

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 to 4 dry, 1 or 2 moist

Texture—extremely gravelly sand, extremely gravelly loamy sand, or very gravelly loamy sand

Content of clay—0 to 2 percent

Reaction—neutral or slightly alkaline

Keechelus Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains

Parent material: Colluvium and residuum derived from basalt, breccia, and pyroclastic rock with a minor amount of volcanic ash in the upper part

Slope range: 5 to 60 percent

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Taxonomic classification: Clayey-skeletal, mixed, superactive, frigid Ultic Palexeralfs

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Typical pedon of Keechelus gravelly ashy loam, stony, in Kittitas County, Washington, about 8 miles northeast of Cle Elum; 1,500 feet north and 100 feet east of the southwest corner of section 26, T. 21 N., R. 16 E.; latitude 47 degrees 30 minutes 12 seconds north and longitude 120 degrees 25 minutes 6 seconds west; NAD 83.

Oe—0 to 3 inches; partially decomposed forest litter; abrupt smooth boundary.

A—3 to 9 inches; pale brown (10YR 6/3) gravelly ashy loam, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; 15 percent gravel and 0.1 percent surface stones; NaF pH 8.6; slightly acid (pH 6.2); abrupt smooth boundary.

Bt1—9 to 22 inches; light yellowish brown (10YR 6/4) gravelly clay loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic, few coarse and common very fine roots; common very fine irregular pores; common distinct clay films on faces of peds; 30 percent gravel; NaF pH 8.5; slightly acid (pH 6.2); gradual wavy boundary.

Bt2—22 to 35 inches; strong brown (7.5YR 5/6) very cobbly clay loam, brown (7.5YR 4/4) moist; strong medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine irregular pores; many prominent clay films on faces of peds and rock fragments; 35 percent gravel and 25 percent cobbles; NaF pH 8.0; slightly acid (pH 6.2); clear wavy boundary.

Bt3—35 to 48 inches; brownish yellow (10YR 6/6) very gravelly clay loam, strong brown (7.5YR 5/6) moist; moderate medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few very fine irregular pores; many prominent clay films on faces of peds; 40 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt4—48 to 66 inches; yellowish brown (10YR 5/6) very gravelly clay loam, dark yellowish brown (10YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine irregular pores; common distinct clay films on faces of peds; 50 percent gravel; slightly acid (pH 6.2).

Thickness of volcanic ash influence: 0 to 6 inches

Particle-size control section: Averages 35 to 55 percent clay and 35 to 60 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—3 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Content of clay—15 to 20 percent

Content of rock fragments—15 to 30 percent gravel, 0 to 5 percent cobble, and 0 to 5 percent stones

Bt1 horizon:

Hue—10YR, 7.5YR, or 2.5Y

Value—5 or 6 dry, 4 or 5 moist

Chroma—4 to 6 dry or moist

Texture—gravelly clay loam or very gravelly clay loam

Content of clay—35 to 40 percent

Reaction—moderately acid or slightly acid

Bt2 horizon:

Hue—10YR, 7.5YR, or 2.5Y

Value—5 or 6 dry, 4 or 5 moist

Chroma—4 to 6 dry or moist

Texture—very cobbly clay loam, very cobbly clay, or very gravelly clay

Content of clay—35 to 55 percent

Reaction—moderately acid or slightly acid

Bt3 and Bt4 horizons:

Hue— 10YR, 7.5YR, or 2.5Y

Value—5 or 6 dry, 4 to 6 moist

Chroma—4 to 6 dry or moist

Texture—very gravelly clay loam, very gravelly clay, or extremely gravelly clay

Content of clay—35 to 55 percent

Reaction—moderately acid or slightly acid

Kiona Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Colluvium derived from basalt mixed with loess in the upper part

Slope range: 15 to 75 percent

Elevation: 700 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Xeric
Haplocambids

Typical pedon of Kiona very stony loam in Kittitas County, Washington; about 1,800 feet west and 900 feet north of the southeast corner of section 33, T. 16 N., R. 20 E.; Badger Gap, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 49 minutes 37 seconds north and longitude 120 degrees 19 minutes 28 seconds west; NAD 83.

A—0 to 4 inches; brown (10YR 5/3) very stony loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular pores; 20 percent gravel, 20 percent cobbles, and 15 percent stones; neutral (pH 7.0); clear smooth boundary.

Bw1—4 to 10 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and few medium roots; many very fine tubular pores; 30 percent gravel and 15 percent cobbles; slightly alkaline (pH 7.8); clear wavy boundary.

Bw2—10 to 21 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; common very fine and few fine roots; many very fine tubular pores; 35 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.8); clear wavy boundary.

Bk1—21 to 28 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine, medium, and coarse roots; common very fine tubular pores; common patchy coatings of lime on faces of peds and lining pores; 55 percent gravel and 20 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—28 to 41 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very

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friable, slightly sticky and slightly plastic; few very fine, medium, and coarse roots; common very fine tubular pores; common patchy coatings of lime on faces of peds and lining pores; 50 percent gravel and 20 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk3—41 to 48 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine tubular pores; common patchy coatings of lime on faces of peds and lining pores; 50 percent gravel and 25 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk4—48 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common distinct coatings of lime on faces of peds and lining pores; 50 percent gravel and 25 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2).

Depth to carbonates: 12 to 36 inches

Particle-size control section: 5 to 15 percent clay and 35 to 75 percent rock fragments

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—7 to 15 percent

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly loam, very cobbly loam, or cobbly silt loam

Content of clay—7 to 15 percent

Bk horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—extremely gravelly loam, extremely cobbly loam, or very cobbly silt loam

Content of clay—7 to 15 percent

Calcium carbonate equivalent—1 to 5 percent

Kiper Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from sandstone with a minor amount of volcanic ash in the upper part

Slope range: 5 to 65 percent

Elevation: 2,200 to 6,200 feet

Mean annual precipitation: 24 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 145 days

Taxonomic classification: Coarse-loamy, isotic, frigid Vitrandic Dystroxerepts

Typical pedon of Kiper stony ashy sandy loam in Kittitas County, Washington, about 11 miles northeast of Ellensburg; 1,500 feet east and 500 feet north of the southwest corner of section 28, T. 21 N., R. 19 E.; latitude 47 degrees 16 minutes 35 seconds north and longitude 120 degrees 27 minutes 50 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter.

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- A—1 to 4 inches; grayish brown (10YR 5/2) stony ashy sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; common very fine and fine roots; few very fine irregular pores; 10 percent stones, 5 percent gravel, and 10 percent paragravel; moderately acid (pH 6.0); abrupt smooth boundary.
- Bw1—4 to 8 inches; pale brown (10YR 6/3) gravelly ashy sandy loam, brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; few very fine and common fine and medium roots; few very fine irregular pores; 15 percent gravel, 15 percent paragravel, and 10 percent paracobbles; moderately acid (pH 5.6); clear wavy boundary.
- Bw2—8 to 35 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and common medium roots; 15 percent gravel, 15 percent paragravel, and 10 percent paracobbles; moderately acid (pH 5.8); clear wavy boundary.
- C—35 to 61 inches; light yellowish brown (10YR 6/4) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, very friable, nonsticky and nonplastic; few fine and common medium roots; 20 percent gravel, 20 percent paragravel, and 10 percent paracobbles; moderately acid (pH 5.6).

Thickness of volcanic ash influence: 7 to 12 inches

Particle-size control section: 5 to 10 percent clay, 5 to 20 percent hard rock fragments, and 15 to 50 percent weathered rock fragments

Reaction: Moderately acid throughout

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—stony ashy sandy loam or ashy sandy loam

Content of clay—5 to 10 percent

Bw horizon:

Value—5 to 7 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—gravelly ashy sandy loam or ashy sandy loam in the upper part and gravelly sandy loam or sandy loam in the lower part

Content of clay—5 to 10 percent

C horizon:

Value—4 or 5 moist

Texture—gravelly loamy sand, gravelly sandy loam, or sandy loam

Content of clay—5 to 10 percent

Kladnick Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces

Parent material: Glacial outwash with a mantle of volcanic ash

Slope range: 0 to 15 percent

Elevation: 2,000 to 3,000 feet

Mean annual precipitation: 25 to 75 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 90 to 120 days

Taxonomic classification: Sandy-skeletal, isotic, frigid Andic Dystroxerepts

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Typical pedon of Kladnick ashy sandy loam in Kittitas County, Washington, about 4 miles southeast of Keechelus Lake; 2,000 feet north and 200 feet west of the southeast corner of section 36, T. 21 N., R. 12 E.; latitude 47 degrees 16 minutes 2 seconds north and longitude 121 degrees 16 minutes 27 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter; abrupt wavy boundary.

A1—1 to 3 inches; dark brown (10YR 4/3) ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; NaF pH 10.5; slightly acid (pH 6.4); abrupt wavy boundary.

A2—3 to 9 inches; yellowish brown (10YR 5/4) ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; 10 percent gravel; NaF pH 12.0; slightly acid (pH 6.2); clear wavy boundary.

Bw1—9 to 15 inches; yellowish brown (10YR 5/4) gravelly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; 25 percent gravel and 5 percent cobbles; NaF pH 12.0; moderately acid (pH 6.0); clear wavy boundary.

2Bw2—15 to 24 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 40 percent gravel and 10 percent cobbles; slightly acid (pH 6.2); abrupt wavy boundary.

3C—24 to 60 inches; yellowish brown (10YR 5/4), dark gray (10YR 4/1), and brownish yellow (10YR 6/6) extremely gravelly sand, dark yellowish brown (10YR 3/4), dark gray (10YR 4/1), and dark yellowish brown (10YR 4/6) moist; single grain; loose; few very fine roots; 50 percent gravel and 20 percent cobbles; slightly acid (pH 6.2).

Thickness of volcanic ash mantle: 7 to 14 inches

Particle-size control section: Averages 0 to 10 percent clay and 45 to 65 percent rock fragments

Reaction: Moderately acid or slightly acid throughout

A horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 or 3 moist

Texture—ashy sandy loam or very stony ashy sandy loam

Content of clay—5 to 10 percent

Bw1 horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—2 to 4 dry or moist

Texture—gravelly ashy sandy loam, ashy sandy loam, or cobbly ashy sandy loam

Content of clay—5 to 10 percent

2Bw2 horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly sandy loam, very gravelly loamy sand, or extremely gravelly loamy sand

Content of clay—0 to 5 percent

3C horizon:

Hue—10YR or 2.5Y

Value—4 to 7 dry, 3 to 6 moist

Chroma—1 to 6 dry or moist

Texture—extremely gravelly sand, extremely cobbly sand, or very gravelly loamy sand

Content of clay—0 to 5 percent

Lablue Series

Depth class: Very shallow

Drainage class: Well drained

Position on landscape: Fan remnants

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 0 to 15 percent

Elevation: 1,300 to 3,400 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Clayey, smectitic, mesic, shallow Haplic Durixerolls

Typical pedon of Lablue very gravelly ashy loam in Kittitas County, Washington, about 4 miles northwest of Ellensburg; about 2,600 feet north and 950 feet west of the southeast corner of section 5, T. 18 N., R. 18 E.; Ellensburg North, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 4 minutes 47 seconds north and longitude 120 degrees 36 minutes 21 seconds west; NAD 83.

A—0 to 2 inches; yellowish brown (10YR 5/4) very gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 30 percent gravel and 10 percent cobbles; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

BA—2 to 5 inches; brown (10YR 5/3) ashy clay loam, dark brown (10YR 3/3) moist; weak fine prismatic structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular and few very fine tubular pores; 10 percent gravel; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

2Bt—5 to 8 inches; brown (7.5YR 5/4) gravelly clay, dark brown (7.5YR 3/3) moist; strong fine prismatic structure parting to strong fine subangular blocky; very hard, friable, moderately sticky and moderately plastic; common very fine roots; few very fine tubular pores; many prominent strong brown (7.5YR 4/3) clay films lining pores and on faces of peds; 20 percent gravel; NaF pH 8.6; neutral (pH 7.2); abrupt smooth boundary.

3Bstqm—8 to 11 inches; pale brown (10YR 6/3), dense alluvium that breaks to very gravelly sandy loam, grayish brown (10YR 5/2) moist; massive; moderately cemented; few very fine roots in vertical seams and common very fine roots concentrated at upper boundary; few very fine pores in seams and around rock fragments and common very fine pores in matrix; common prominent dark brown (7.5YR 4/4) clay films in vertical seams; prominent pale brown (10YR 6/3) concentrations that are 1 millimeter in size at upper boundary; many prominent light yellowish brown (10YR 6/4) coatings around rock fragments; few coatings of silica on bottom of rock fragments; common prominent black (N 2/0) iron-manganese stains around rock fragments and in seams; 35 percent gravel and 10 percent cobbles; NaF pH 8.7; neutral (pH 7.0); clear wavy boundary.

3Bsqm—11 to 37 inches; pale brown (10YR 6/3), dense alluvium that breaks to extremely gravelly sandy loam, grayish brown (10YR 5/2) moist; massive; moderately cemented; few very fine pores in seams and around rock fragments and common very fine and fine pores in matrix; common distinct light yellowish brown (10YR 6/4) coatings around rock fragments; few coatings of silica on bottom of rock fragments; common prominent black (N 2/0) iron-manganese stains around

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rock fragments, in seams, and in pores; 50 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0); clear wavy boundary.

3Bs—37 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, grayish brown (10YR 5/2) moist; massive; weakly cemented; common very fine, fine, and medium pores; few prominent black (N 2/0) iron-manganese stains around rock fragments; 50 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0).

Thickness of mollic epipedon: 7 to 10 inches

Thickness of volcanic ash influence: 4 to 6 inches

Depth to the duripan: 7 to 10 inches

Particle-size control section: 35 to 45 percent clay and 5 to 30 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 to 4 dry, 2 or 3 moist

Texture—very gravelly ashy loam or very cobbly ashy loam

Content of clay—20 to 25 percent

Reaction—slightly acid or neutral

BA horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 to 4 dry, 2 or 3 moist

Content of clay—27 to 30 percent

Reaction—slightly acid or neutral

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—clay loam, gravelly clay, or gravelly clay loam

Content of clay—35 to 45 percent

Reaction—slightly acid or neutral

3Bstqm horizon:

Cementation—moderately cemented

3Bsqm horizon:

Cementation—moderately cemented

3Bs horizon:

Cementation—weakly cemented

Texture—extremely gravelly sandy loam or very gravelly sandy loam

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 15 percent

Reaction—slightly alkaline or neutral

Lainand Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Colluvium with mixed loess and volcanic ash in the upper part

Slope range: 15 to 70 percent

Elevation: 1,000 to 3,500 feet

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Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic
Argixerolls

Typical pedon of Lainand ashy loam, 30 to 70 percent slopes, in Kittitas County, Washington, about 5 miles south of Ellensburg; about 400 feet south and 1,000 feet west of the northeast corner of section 7, T. 16 N., R. 19 E.; Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 53 minutes 49 seconds north and longitude 120 degrees 29 minutes 33 seconds west; NAD 83.

A1—0 to 6 inches; brown (10YR 4/3) ashy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and coarse roots; many very fine irregular and tubular pores; 5 percent gravel; neutral (pH 6.8); clear smooth boundary.

A2—6 to 12 inches; brown (10YR 4/3) ashy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine, and few coarse roots; many very fine irregular and tubular pores; 10 percent gravel; neutral (pH 6.8); clear wavy boundary.

AB—12 to 20 inches; brown (10YR 4/3) cobbly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate fine, medium, and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few coarse roots; many very fine irregular and tubular pores; 10 percent cicada casts; 10 percent gravel and 15 percent cobbles; neutral (pH 6.6); clear wavy boundary.

2Bt1—20 to 30 inches; brown (10YR 5/3) very cobbly clay loam, brown (10YR 4/3) moist; moderate fine, medium, and coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few coarse roots; common very fine tubular pores; few distinct patchy yellowish red (5YR 5/8) clay films on faces of peds; 50 percent cicada casts; 25 percent gravel, 15 percent cobbles, 5 percent stones, and 1 percent boulders; neutral (pH 6.6); clear wavy boundary.

2Bt2—30 to 41 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate very fine and fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; common very fine tubular pores; few distinct patchy yellowish red (5YR 5/8) clay films on faces of peds; 50 percent cicada casts; 25 percent gravel, 15 percent cobbles, 5 percent stones, and 1 percent boulders; slightly acid (pH 6.5); clear wavy boundary.

2Bt3—41 to 54 inches; yellowish brown (10YR 5/4) very cobbly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; moderately hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; common very fine tubular pores; few distinct patchy yellowish red (5YR 5/8) clay films on faces of peds; 15 percent gravel, 20 percent cobbles, and 1 percent boulders; slightly acid (pH 6.4); clear wavy boundary.

2Bw—54 to 60 inches; yellowish brown (10YR 5/4) very cobbly loam, dark brown (10YR 3/3) moist; weak medium and coarse prismatic structure parting to weak fine and medium subangular blocky; moderately hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; 10 percent cicada casts; 15 percent gravel and 25 percent cobbles; slightly acid (pH 6.4).

Thickness of mollic epipedon: 20 to 29 inches

Thickness of volcanic ash influence: 20 to 29 inches

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Particle-size control section: 30 to 35 percent clay and 35 to 85 percent rock fragments

Reaction: Slightly acid or neutral throughout

A1 horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 25 percent

A2 horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or gravelly ashy loam

Content of clay—15 to 25 percent

AB horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very gravelly ashy loam, very cobbly ashy loam, or cobbly ashy loam

Content of clay—15 to 25 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly clay loam, extremely cobbly clay loam, or extremely gravelly clay loam in the upper part and extremely cobbly loam, very cobbly loam, or extremely gravelly clay loam in the lower part

Content of clay—30 to 35 percent

2Bw horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly loam, extremely cobbly loam, or extremely gravelly loam

Content of clay—20 to 35 percent

Laric Series

Depth class: Very shallow

Drainage class: Well drained

Position on landscape: Summits of hills and structural benches

Parent material: Residuum derived from basalt

Slope range: 3 to 15 percent

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy, mixed, superactive, mesic Lithic Argixerolls

Typical pedon of Laric very gravelly loam in Kittitas County, Washington, about 7 miles west of Vantage; about 200 feet west and 2,500 feet south of the northeast corner of section 12, T. 17 N., R. 21 E.; Boyleston, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 57 minutes 49 seconds north and longitude 120 degrees 8 minutes 5 seconds west; NAD 83.

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A—0 to 3 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; few fine irregular pores; 40 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.

Bt1—3 to 6 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 20 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bt2—6 to 9 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine and fine tubular pores; 25 percent gravel; neutral (pH 7.2); abrupt irregular boundary.

R—9 inches; basalt.

Thickness of mollic epipedon: 5 to 12 inches

Depth to bedrock: 5 to 12 inches

Particle-size control section: 23 to 30 percent clay and 15 to 35 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—10 to 18 percent

Bt horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—gravelly clay loam or gravelly loam

Content of clay—23 to 30 percent

Laufer Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Hillslopes and canyon walls

Parent material: Slope alluvium and colluvium derived from basalt with loess in the upper part

Slope range: 3 to 75 percent

Elevation: 1,700 to 4,400 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 100 to 145 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Lithic Argixerolls

Typical pedon of Laufer very cobbly loam in Kittitas County, Washington, about 4 miles southwest of Thorp; 330 feet west and 490 feet north of the southeast corner of section 20, T. 18 N., R. 17 E.; 47 degrees 1 minute 46 seconds north and longitude 120 degrees 43 minutes 54 seconds west; NAD 83.

A1—0 to 3 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; hard, firm, moderately sticky and

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moderately plastic; many very fine and common fine roots; many very fine irregular pores; 5 percent gravel, 35 percent cobbles, and 5 percent stones; neutral (pH 6.8); clear wavy boundary.

A2—3 to 7 inches; brown (10YR 4/3) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; hard, firm, moderately sticky and moderately plastic; many very fine and few fine roots; common very fine irregular pores; many faint clay films on faces of peds; 30 percent gravel, 15 percent cobbles, and 10 percent stones; neutral (pH 7.0); clear wavy boundary.

Bt1—7 to 10 inches; brown (10YR 4/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; common very fine tubular pores; continuous distinct stress cutans on faces of peds; 30 percent gravel, 25 percent cobbles, and 5 percent stones; neutral (pH 7.2); clear wavy boundary.

Bt2—10 to 15 inches; brown (10YR 4/3) extremely cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; few very fine tubular pores; continuous distinct stress cutans on faces of peds; 35 percent gravel, 25 percent cobbles, and 10 percent stones; neutral (pH 7.2); abrupt wavy boundary.

2R—15 inches; basalt

Thickness of mollic epipedon: 10 to 20 inches

Depth to bedrock: 10 to 20 inches

Particle-size control section: 35 to 40 percent clay and 45 to 70 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly loam or very cobbly clay loam

Content of clay—23 to 27 percent

Bt1 horizon:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly clay loam or very gravelly clay loam

Content of clay—35 to 40 percent

Reaction—neutral or slightly alkaline

Bt2 horizon:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—extremely cobbly clay loam, very cobbly clay loam, or extremely gravelly clay

Content of clay—35 to 45 percent

Reaction—neutral or slightly alkaline

Lemah Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium derived from sandstone mixed with volcanic ash

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Slope range: 60 to 90 percent

Elevation: 2,700 to 5,800 feet

Mean annual precipitation: 50 to 80 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 60 to 90 days

Taxonomic classification: Ashy-skeletal, amorphic Typic Vitricryands

Typical pedon of Lemah very stony ashy sandy loam in Kittitas County, Washington, about 3 miles northwest of Salmon la Sac, along the Waptus River Trail; 150 feet east and 2,100 feet north of the southwest corner of section 32, T. 23 N., R. 14 E., latitude 47 degrees 26 minutes 31 seconds north and longitude 121 degrees 7 minutes 46 seconds west; NAD 83.

Oe—0 to 0.5 inch; partially decomposed forest litter.

A—0.5 to 3 inches; grayish brown (10YR 5/2) very stony ashy sandy loam (Y volcanic ash from Mount St. Helens), very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; 10 percent gravel, 20 percent cobbles, and 15 percent stones; moderately acid (pH 5.6); abrupt wavy boundary.

Bw1—3 to 9 inches; yellowish brown (10YR 5/6) very cobbly ashy sandy loam, dark yellowish brown (10YR 4/6) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium roots; 15 percent gravel, 30 percent cobbles, and 5 percent stones; NaF pH 12.0; moderately acid (pH 5.6); clear wavy boundary.

Bw2—9 to 21 inches; yellowish brown (10YR 5/4) very cobbly ashy sandy loam, dark yellowish brown (10YR 3/6) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; 20 percent gravel, 35 percent cobbles, and 5 percent stones; NaF pH 12.0; moderately acid (pH 5.6); gradual wavy boundary.

BC—21 to 37 inches; light yellowish brown (10YR 6/4) extremely cobbly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; 30 percent gravel, 35 percent cobbles, and 5 percent stones; NaF pH 12.0; moderately acid (pH 6.0); clear wavy boundary.

C—37 to 60 inches; light yellowish brown (2.5Y 6/4) extremely cobbly ashy sandy loam, olive brown (2.5Y 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 40 percent gravel and 30 percent cobbles; NaF pH 12.0; moderately acid (pH 6.0).

Thickness of volcanic ash influence: Entire soil profile

Particle-size control section: Averages 5 to 10 percent clay and 40 to 75 percent rock fragments

A horizon:

Chroma—2 or 3 moist

Content of clay—5 to 8 percent

Reaction—moderately acid or slightly acid

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 moist

Texture—very cobbly ashy sandy loam or extremely cobbly ashy sandy loam

Content of clay—5 to 10 percent

BC horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4 moist

Texture—extremely cobbly ashy sandy loam or very cobbly ashy sandy loam

Content of clay—5 to 10 percent

C horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry

Content of clay—5 to 10 percent

Levnik Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Hillslopes and dissected plateaus

Parent material: Residuum derived from basalt with loess in the upper part

Slope range: 3 to 30 percent

Elevation: 1,200 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Clayey, smectitic, mesic Lithic Xeric Haplargids

Typical pedon of Levnik very gravelly loam in Kittitas County, Washington, about 3 miles southwest of Vantage; about 2,400 feet north and 400 feet west of the southeast corner of section 34, T. 17 N., R. 22 E.; Ginkgo, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 55 minutes 10 seconds north and longitude 120 degrees 2 minutes 28 seconds west; NAD 83.

A—0 to 4 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few coarse roots; few very fine tubular pores; 40 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt1—4 to 8 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and few very fine, fine, and coarse roots; few fine and medium interstitial and tubular pores; common distinct clay films lining pores and on faces of peds; 10 percent gravel; neutral (pH 7.3); clear wavy boundary.

Bt2—8 to 13 inches; brown (10YR 5/3) gravelly clay, dark brown (10YR 3/3) moist; strong fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and few fine roots; few fine and medium interstitial and tubular roots; common distinct clay films lining pores and on faces of peds; 20 percent gravel; slightly alkaline (pH 7.6); abrupt wavy boundary.

2Btk—13 to 16 inches; brown (10YR 5/3) extremely gravelly clay, brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, and medium roots; few fine and medium interstitial and tubular pores; many prominent clay films lining pores and on faces of peds; few faint coatings of lime on vertical and horizontal faces of peds; 45 percent gravel and 25 percent cobbles; slightly alkaline (pH 7.8); abrupt smooth boundary.

3R—16 inches; fractured basalt with coatings of silica on 30 percent of total surface area.

Depth to bedrock: 12 to 20 inches

Particle-size control section: Averages 35 to 44 percent clay and 15 to 35 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 moist
Content of clay—17 to 24 percent

Bt horizon:

Hue—10YR or 7.5YR
Value—4 or 5 dry
Texture—clay loam, gravelly clay loam, or gravelly clay
Content of clay—30 to 45 percent

2Btk horizon:

Hue—10YR or 7.5YR
Value—4 or 5 dry
Texture—extremely gravelly clay, very cobbly clay, or very gravelly clay
Content of clay—40 to 50 percent
Calcium carbonate equivalent—1 to 3 percent

Loneridge Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Slopes and summits of mountains

Parent material: Residuum and colluvium derived from basalt and andesite mixed with loess and volcanic ash in the upper part

Slope range: 0 to 65 percent

Elevation: 1,700 to 5,400 feet

Mean annual precipitation: 20 to 40 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 75 to 105 days

Taxonomic classification: Clayey-skeletal, isotic, frigid Vitrandic Palexeralfs

Typical pedon of Loneridge ashy loam, stony, in Kittitas County, Washington, about 0.75 mile southeast of Walter Flat in the Naneum basin; 2,200 feet north and 800 feet east of the southwest corner of section 23, T. 20 N., R. 19 E., latitude 47 degrees 12 minutes 39 seconds north and longitude 120 degrees 25 minutes 27 seconds west; NAD 83.

A—0 to 4 inches; brown (10YR 5/3) ashy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine and common medium roots; few very fine irregular pores; 2 percent cobbles and 0.1 percent surface stones; NaF pH 8.5; moderately acid (pH 6.0); abrupt smooth boundary.

E—4 to 11 inches; pale brown (10YR 6/3) very gravelly ashy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; common very fine irregular pores; 30 percent gravel and 10 percent cobbles; NaF pH 8.5; moderately acid (pH 6.0); abrupt wavy boundary.

BE—11 to 19 inches; light brown (7.5YR 6/4) very cobbly ashy loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; few very fine irregular pores; 25 percent gravel and 25 percent cobbles; slightly acid (pH 6.2); abrupt smooth boundary.

2Bt1—19 to 30 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; strong fine subangular blocky structure; hard, very firm, moderately sticky and moderately plastic; few fine and medium roots;

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few very fine irregular pores; many distinct clay films on faces of peds; common distinct clay films on rock fragments; 30 percent gravel and 20 percent cobbles; slightly acid (pH 6.2); abrupt smooth boundary.

2Bt2—30 to 46 inches; yellowish brown (10YR 5/4) very cobbly clay, dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; very hard, extremely firm, very sticky and very plastic; few fine roots; continuous prominent clay films on faces of peds and many prominent clay films on rock fragments; 20 percent gravel and 20 percent cobbles; slightly acid (pH 6.2); abrupt smooth boundary.

2Bt3—46 to 60 inches; pale brown (10YR 6/3) extremely gravelly clay, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; many distinct clay films on faces of peds and rock fragments; 50 percent gravel and 20 percent cobbles; moderately acid (pH 6.0).

Thickness of volcanic ash influence: 7 to 20 inches

Particle-size control section: 35 to 55 percent clay and 35 to 75 percent rock fragments

Reaction: Moderately acid to neutral throughout

Percentage of surface covered with stones: 0.1 to 3.0 percent

A horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Content of clay—15 to 25 percent

E and BE horizons:

Hue—10YR or 7.5YR

Value—4 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly ashy loam, very gravelly ashy loam, or cobbly ashy loam

Content of clay—15 to 25 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly clay, very cobbly clay loam, or extremely gravelly clay

Content of clay—35 to 55 percent

Madrak Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Slopes and summits of mountains

Parent material: Colluvium and residuum derived from sandstone mixed with volcanic ash

Slope range: 5 to 45 percent

Elevation: 4,100 to 6,400 feet

Mean annual precipitation: 25 to 35 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 35 to 85 days

Taxonomic classification: Ashy-skeletal, glassy Xeric Vitricryands

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Typical pedon of Madrak gravelly ashy loam in Kittitas County, Washington, about 2 miles west of Mission Peak; 1,500 feet east and 1,500 feet north of the southwest corner of section 20, T. 21 N., R. 19 E.; latitude 47 degrees 17 minutes 36 seconds north and longitude 120 degrees 29 minutes 15 seconds west; NAD 83.

Oi—0 to 1 inch; forest litter.

A—1 to 2 inches; dark grayish brown (10YR 4/2) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine and fine roots; 15 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

Bw1—2 to 10 inches; brown (7.5YR 5/4) gravelly ashy loam, dark brown (7.5YR 3/4) moist; moderate very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; 20 percent gravel; NaF pH 12.0; moderately acid (pH 5.8); clear smooth boundary.

Bw2—10 to 19 inches; light yellowish brown (10YR 6/4) very cobbly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; 20 percent gravel and 20 percent cobbles; NaF pH 11.5; moderately acid (pH 5.8); clear smooth boundary.

C—19 to 30 inches; pale yellow (2.5Y 7/4) very cobbly ashy sandy loam, light olive brown (2.5Y 5/4) moist; single grain; loose; weakly smeary; 20 percent gravel and 30 percent cobbles; NaF pH 11.5; moderately acid (pH 5.8); abrupt smooth boundary.

R—30 inches; hard, fractured sandstone.

Thickness of volcanic ash influence: Entire soil profile

Depth to bedrock: 20 to 40 inches

Particle-size control section: Averages 5 to 15 percent clay and 35 to 65 percent rock fragments

Reaction: Moderately acid throughout

A horizon:

Hue—10YR or 7.5YR

Value—3 or 4 dry

Content of clay—5 to 15 percent

Bw1 horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Texture—gravelly ashy loam

Content of clay—5 to 15 percent

Bw2 horizon:

Value—5 or 6 dry, 3 or 4 moist

Texture—very cobbly ashy sandy loam

Content of clay—5 to 15 percent

C horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly ashy loamy sand, extremely cobbly ashy loamy sand, or very cobbly ashy sandy loam

Content of clay—5 to 10 percent

Malaga Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces and terrace escarpments

Parent material: Glacial outwash

Slope range: 2 to 60 percent

Elevation: 500 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Sandy-skeletal, mixed, mesic Xeric Haplocambids

Typical pedon of Malaga stony sandy loam in Kittitas County, Washington, about 2 miles south of Vantage; about 400 feet north and 2,000 feet west of the southeast corner of section 31, T. 17 N., R. 23 E.; Vantage, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 54 minutes 49 seconds north and longitude 119 degrees 59 minutes 31 seconds west; NAD 83.

- A—0 to 5 inches; brown (10YR 5/3) stony sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine pores; 10 percent gravel, 5 percent cobbles, and 10 percent stones; neutral (pH 6.8); abrupt smooth boundary.
- Bw1—5 to 9 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; many very fine and few medium roots; common very fine pores; 20 percent gravel; neutral (pH 7.0); clear smooth boundary.
- Bw2—9 to 12 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; common very fine roots; common very fine pores; 35 percent gravel and 15 percent cobbles; neutral (pH 7.1); clear wavy boundary.
- Bw3—12 to 19 inches; brown (7.5YR 5/4) extremely gravelly sandy loam, brown (7.5YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine pores; 60 percent gravel and 5 percent cobbles; neutral (pH 7.2); abrupt wavy boundary.
- 2C1—19 to 23 inches; pale brown (10YR 6/3) extremely gravelly coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; few fine pores; 55 percent gravel and 10 percent cobbles; neutral (pH 7.2); abrupt wavy boundary.
- 2C2—23 to 60 inches; pale brown (10YR 6/3) extremely gravelly coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; 55 percent gravel and 10 percent cobbles; very slightly effervescent; slightly alkaline (pH 7.6).

Depth to extremely gravelly sandy material: 15 to 28 inches

Particle-size control section: 5 to 15 percent clay and averages 50 to 85 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—3 or 4 dry or moist

Texture—cobbly sandy loam, stony sandy loam, or gravelly sandy loam

Content of clay—5 to 15 percent

Reaction—slightly alkaline or neutral

Bw horizon:

Hue—10YR or 7.5YR

Value—4 to 7 dry, 3 to 5 moist

Chroma—2 to 4 dry or moist

Texture—gravelly fine sandy loam, gravelly sandy loam, gravelly loam, very gravelly fine sandy loam, very gravelly sandy loam, very gravelly loam, or extremely gravelly sandy loam in the lower part

Content of clay—5 to 15 percent

Reaction—slightly alkaline or neutral

2C horizon:

Value—5 to 7 dry, 4 to 6 moist

Chroma—3 or 4 dry or moist

Texture—extremely gravelly loamy sand, extremely gravelly coarse sand, or very cobbly sand

Content of clay—0 to 5 percent

Calcium carbonate equivalent—0 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Manastash Series

Depth class: Moderately deep to a duripan

Drainage class: Well drained

Position on landscape: Alluvial fan remnants and terraces

Parent material: Loess and alluvium

Slope range: 0 to 30 percent

Elevation: 1,200 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine, smectitic, mesic Abruptic Argiduridic Durixerolls

Typical pedon of Manastash loam ([fig. 3](#)) in Kittitas County, Washington, about 2 miles northwest of Kittitas; 200 feet west and 800 feet south of the northeast corner of section 33, T. 18 N., R. 19 E.; Colockum Pass SW, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 0 minutes 48 seconds north and longitude 120 degrees 27 minutes 14 seconds west; NAD 83.

Ap—0 to 5 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; slightly hard, friable, nonsticky and slightly plastic; many very fine and fine and common medium roots; common fine tubular pores; neutral (pH 7.0); clear wavy boundary.

AB—5 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; neutral (pH 7.0); abrupt wavy boundary.

Bt1—10 to 15 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; few faint clay films on faces of peds; neutral (pH 7.0); abrupt wavy boundary.

Bt2—15 to 22 inches; dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; common



Figure 3.—Typical profile of Manastash loam. Large irregular soft masses of lime are at a depth of 22 inches, and a duripan that restricts root penetration is at a depth of 25 inches. Scale is in feet.

very fine and fine roots; common very fine irregular pores; many distinct clay films on faces of peds; 5 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

Btk—22 to 25 inches; brown (7.5YR 4/4) gravelly clay, dark brown (7.5YR 3/4) moist; strong fine and medium angular blocky structure; very hard, firm, sticky and plastic; many very fine and fine roots; violently effervescent; lime segregated in many large irregular soft masses; common distinct clay films on faces of peds; 10 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

2Bkqm1—25 to 42 inches; white (10YR 8/1), indurated, lime- and silica-cemented very cobbly duripan, pale brown (10YR 6/3) moist; impervious to roots and water; violently effervescent; 30 percent imbedded gravel and 30 percent imbedded cobbles; clear wavy boundary.

2Bkqm2—42 to 60 inches; moderately cemented very gravelly sandy loam.

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Thickness of mollic epipedon: 8 to 20 inches thick

Depth to duripan: 20 to 40 inches

Particle-size control section: Averages 35 to 60 percent clay and 0 to 20 percent rock fragments

Ap horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 20 percent

Reaction—slightly acid to slightly alkaline

AB horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—15 to 20 percent

Reaction—neutral or slightly alkaline

Bt1 horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—loam or gravelly loam

Content of clay—18 to 27 percent

Reaction—neutral or slightly alkaline

Bt2 horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—clay, gravelly clay loam, or gravelly clay

Content of clay—35 to 55 percent

Reaction—neutral or slightly alkaline

Btk horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Texture—gravelly clay, clay, or sandy clay

Content of clay—35 to 65 percent

Calcium carbonate equivalent—0 to 15 percent

Reaction—slightly alkaline or moderately alkaline

2Bkqm1 horizon:

Cementation—indurated

2Bkqm2 horizon:

Cementation—moderately cemented

Texture—very gravelly sandy loam, extremely gravelly sandy loam, or extremely cobbly sandy loam

Marlic Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Dissected plateaus

Parent material: Residuum derived from basalt

Slope range: 3 to 15 percent

Elevation: 1,500 to 2,900 feet

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Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy, mixed, superactive, mesic Lithic Argixerolls

Typical pedon of Marlic loam in Kittitas County, Washington, about 7 miles west of Vantage; about 2,500 feet south and 350 feet east of the northwest corner of section 18, T. 17 N., R. 22 E.; Boyleston, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 57 minutes 48 seconds north and longitude 120 degrees 7 minutes 57 seconds west; NAD 83.

A—0 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, friable, nonsticky and nonplastic; many very fine and fine roots; few very fine and fine tubular pores; neutral (pH 7.2); clear wavy boundary.

BA—3 to 6 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; few very fine and fine interstitial and tubular pores; neutral (pH 7.2); clear wavy boundary.

Bt1—6 to 15 inches; dark yellowish brown (10YR 4/4) clay loam, dark brown (10YR 3/3) moist; strong medium and coarse prismatic structure; very hard, firm, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common fine and medium interstitial and tubular pores; common distinct clay films lining pores and on faces of peds; 5 percent gravel; neutral (pH 7.2); abrupt wavy boundary.

2Bt2—15 to 18 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, dark brown (10YR 3/3) moist; strong fine and medium prismatic structure; very hard, firm, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common fine and medium interstitial and tubular pores; common distinct clay films lining pores and on faces of peds; 25 percent gravel; neutral (pH 7.2); abrupt irregular boundary.

3R—18 inches; fractured basalt.

Thickness of mollic epipedon: 0 to 15 inches

Depth to bedrock: 12 to 20 inches

Particle-size control section: Averages 27 to 35 percent clay and 5 to 20 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—17 to 23 percent

BA horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—17 to 23 percent

Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—clay loam

Content of clay—averages 27 to 30 percent

2Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—clay loam or gravelly clay loam
Content of clay—averages 35 to 40 percent

Maxhill Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Alluvial fans and terraces

Parent material: Alluvium or outwash with an influence of loess and volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Vitrandic Argixerolls

Typical pedon of Maxhill ashy loam in Kittitas County, Washington, about 1 mile northwest of Thorp; about 2,100 feet west and 2,200 feet south of the northeast corner of section 3, T. 18 N., R. 17 E.; Thorp, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 4 minutes 54 seconds north and longitude 120 degrees 41 minutes 42 seconds west; NAD 83.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular and many very fine irregular pores; 10 percent gravel; NaF pH 8.5; neutral (pH 7.2); abrupt smooth boundary.

A—7 to 10 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular and many very fine irregular pores; 10 percent gravel; NaF pH 8.5; neutral (pH 7.2); clear wavy boundary.

AB—10 to 13 inches; brown (10YR 4/3) gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular and many very fine irregular pores; 20 percent gravel; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

Bt—13 to 48 inches; brown (10YR 4/3) very gravelly sandy clay, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic; few very fine roots; common very fine tubular and many very fine irregular pores; many distinct brown (7.5YR 4/3) clay films lining pores and on faces of peds; 35 percent gravel and 10 percent cobbles; NaF pH 8.6; neutral (pH 7.2); abrupt wavy boundary.

2BC—48 to 60 inches; brown (10YR 4/3) extremely gravelly loamy coarse sand, very dark brown (10YR 2/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 55 percent gravel and 35 percent cobbles; NaF pH 8.3; neutral (pH 7.2).

Thickness of mollic epipedon: 25 to 50 inches

Thickness of volcanic ash influence: 10 to 25 inches

Particle-size control section: 35 to 40 percent clay and 35 to 80 percent rock fragments

Depth to sand and gravel: 40 to 60 inches

Reaction: Slightly acid or neutral throughout

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Ap and A horizons:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—ashy loam, cobbly ashy loam, or very cobbly ashy loam

Content of clay—18 to 23 percent

AB horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—gravelly ashy loam, very gravelly ashy loam, or cobbly ashy loam

Content of clay—22 to 27 percent

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly sandy clay, very cobbly sandy clay, or extremely gravelly sandy clay

Content of clay—35 to 40 percent

2BC horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—extremely gravelly loamy coarse sand, extremely cobbly loamy sand, or extremely gravelly loamy sand

Content of clay—0 to 15 percent

McDaniel Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Canyons and hillslopes

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 3 to 65 percent

Elevation: 1,800 to 3,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 100 to 135 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of McDaniel gravelly ashy loam in Kittitas County, Washington, about 11 miles northwest of Vantage; about 1,200 feet north and 2,300 feet east of the southwest corner of section 5, T. 18 N., R. 21 E.; Whiskey Dick Mountain, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 4 minutes 37 seconds north and longitude 120 degrees 13 minutes 42 seconds west; NAD 83.

A1—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; many fine tubular pores; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

A2—7 to 14 inches; dark grayish brown (10YR 4/2) gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure parting to moderate medium granular; soft, friable, slightly sticky and slightly plastic; many

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very fine and few medium and coarse roots; many fine tubular pores; 25 percent gravel; neutral (pH 6.8); clear wavy boundary.

AB—14 to 19 inches; brown (10YR 4/3) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure parting to moderate medium granular; soft, friable, slightly sticky and slightly plastic; many very fine, few medium, and common coarse roots; many fine tubular pores; 25 percent gravel and 5 percent cobbles; neutral (pH 6.9); clear wavy boundary.

2Bt1—19 to 24 inches; brown (7.5YR 5/3) very cobbly clay loam, dark brown (7.5YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and coarse roots; many fine tubular pores; few faint clay films on faces of peds; 30 percent gravel and 20 percent cobbles; neutral (pH 7.0); clear wavy boundary.

2Bt2—24 to 32 inches; brown (7.5YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; moderately hard, firm, moderately sticky and moderately plastic; common very fine and few medium roots; few faint clay films on faces of peds; 30 percent gravel and 20 percent cobbles; neutral (pH 7.0); clear wavy boundary.

2Bt3—32 to 40 inches; brown (7.5YR 5/4) extremely cobbly clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common fine and few medium roots; few faint clay films on faces of peds; 35 percent gravel and 25 percent cobbles; neutral (pH 7.2); clear wavy boundary.

2BC1—40 to 50 inches; brown (7.5YR 5/4) extremely cobbly clay loam, brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine roots; 40 percent gravel and 30 percent cobbles; neutral (pH 7.0); clear wavy boundary.

2BC2—50 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine roots; 35 percent gravel and 50 percent cobbles; neutral (pH 7.1).

Thickness of mollic epipedon: 20 to 40 inches

Thickness of volcanic ash influence: 7 to 20 inches

Particle-size control section: 27 to 35 percent clay and 35 to 90 percent rock fragments

Reaction: Neutral throughout

A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—gravelly ashy loam or very stony ashy loam

Content of clay—15 to 20 percent

AB horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly ashy loam or gravelly ashy loam

Content of clay—15 to 20 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly clay loam, very cobbly clay loam, or extremely gravelly clay loam

Content of clay—27 to 35 percent

2BC horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Texture—extremely cobbly clay loam, very cobbly clay loam, or extremely gravelly loam

Content of clay—27 to 35 percent

Meloza Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Alluvial fans and fan pediments

Parent material: Residuum derived from fine textured interbedded sediment

Slope range: 15 to 30 percent

Elevation: 1,300 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine, smectitic, mesic Torreritic Argixerolls

Typical pedon of Meloza clay loam in Kittitas County, Washington, about 13 miles south of Kittitas; about 500 feet south and 800 feet east of the northwest corner of section 22, T. 15 N., R. 19 E.; Wymer, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 46 minutes 46 seconds north and longitude 120 degrees 26 minutes 27 seconds west; NAD 83.

A—0 to 4 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and thick platy structure parting to moderate medium and coarse granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine irregular pores; neutral (pH 6.8); clear wavy boundary.

BAt—4 to 10 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; strong coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine and fine tubular pores; neutral (pH 7.0); clear wavy boundary.

Bt1—10 to 17 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; strong coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, very firm, moderately sticky and moderately plastic; common very fine roots; common very fine tubular pores; neutral (pH 7.1); clear wavy boundary.

Bt2—17 to 30 inches; pale brown (10YR 6/3) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few fine tubular pores; slightly alkaline (pH 7.4); clear wavy boundary.

Btk1—30 to 33 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few fine tubular pores; few distinct clay films lining pores; few fine coatings of lime on bottom of rock fragments; strongly effervescent; moderately alkaline (pH 7.9); clear wavy boundary.

Btk2—33 to 38 inches; pale brown (10YR 6/3) clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few fine

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tubular pores; few distinct clay films on faces of peds and lining pores and few fine coatings of lime on faces of peds and lining pores; strongly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk1—38 to 42 inches; very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few fine tubular pores; few distinct clay films lining pores; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—42 to 60 inches; very pale brown (10YR 7/4) sandy clay loam, light yellowish brown (10YR 6/4) moist; weak fine and medium subangular blocky structure; hard, very firm, slightly sticky and slightly plastic; few very fine tubular pores; few distinct clay films lining pores; violently effervescent; moderately alkaline (pH 8.3).

Thickness of mollic epipedon: 10 to 19 inches

Particle-size control section: Averages 35 to 60 percent clay and 0 to 5 percent rock fragments

Depth to secondary carbonates: 21 to 60 inches

A horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—1 or 2 dry or moist

Content of clay—27 to 30 percent

Reaction—neutral or slightly alkaline

BAt horizon:

Chroma—2 or 3 dry or moist

Texture—silty clay loam, clay loam, or clay

Content of clay—35 to 60 percent

Reaction—neutral or slightly alkaline

Bt and Btk horizons:

Hue—10YR or 7.5YR

Value—5 to 7 dry, 4 to 6 moist

Chroma—2 to 4 dry or moist

Texture—silty clay loam, clay loam, or clay

Content of clay—35 to 60 percent

Calcium carbonate equivalent—1 to 20 percent

Reaction—neutral or slightly alkaline in the Bt horizon and slightly alkaline in the Btk horizon

Bk horizon:

Value—6 or 7 dry, 5 or 6 moist

Chroma—3 to 5 dry or moist

Texture—clay loam or sandy clay loam

Content of clay—30 to 60 percent

Calcium carbonate equivalent—1 to 20 percent

Reaction—slightly alkaline or moderately alkaline

Mendian Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces

Parent material: Outwash with loess in the upper part

Slope range: 0 to 2 percent

Elevation: 1,200 to 2,100 feet

Mean annual precipitation: 12 to 16 inches

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Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Ultic Argixerolls

Typical pedon of Mendian very fine sandy loam in Kittitas County, Washington, about 1 mile northwest of Thorp; about 2,400 feet east and 2,500 feet north of the southwest corner of section 3, T. 18 N., R. 17 E.; Thorp, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 4 minutes 46 seconds north and longitude 120 degrees 41 minutes 53 seconds west; NAD 83.

- Ap—0 to 6 inches; dark grayish brown (10YR 4/2) very fine sandy loam, very dark brown (10YR 2/2) moist; weak fine, medium, and coarse granular structure; soft, very friable and nonplastic; many very fine roots; many very fine irregular pores; strongly acid (pH 5.5); abrupt smooth boundary.
- AB—6 to 13 inches; dark grayish brown (10YR 4/2) very fine sandy loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine irregular and common very fine tubular pores; moderately acid (pH 5.8); clear wavy boundary.
- Bt1—13 to 16 inches; brown (10YR 4/3) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and tubular pores; few coarse vertical tubular pores lined with dark grayish brown (10YR 4/2) surface material; many distinct pressure faces on peds; common faint clay bridges in pores and few faint brown (7.5YR 4/4) clay films on faces of peds and in pores; 10 percent very coarse cylindrical cicada casts; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.
- Bt2—16 to 22 inches; brown (10YR 4/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores, common very fine irregular pores, and few very coarse vertical tubular pores lined with dark grayish brown (10YR 4/2) surface material; many distinct pressure faces on peds; common faint clay bridges in pores and few faint brown (7.5YR 4/4) clay films on faces of peds and in pores; 10 percent very coarse cylindrical cicada casts; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.
- 2Btb1—22 to 38 inches; dark yellowish brown (10YR 4/4) sandy clay loam, dark brown (7.5YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, moderately sticky and moderately plastic; common very fine roots; many very fine tubular pores, common very fine irregular pores, and few very coarse vertical tubular pores lined with dark grayish brown (10YR 4/2) surface material; many distinct pressure faces on peds; common distinct strong brown (7.5YR 4/6) clay films on faces of peds and in pores; 10 percent very coarse cylindrical cicada casts; 10 percent gravel; neutral (pH 6.8); abrupt wavy boundary.
- 3Btb2—38 to 46 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay, dark brown (7.5YR 3/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine tubular pores; many distinct pressure faces on peds; common distinct strong brown (7.5YR 4/6) clay films on faces of peds, on rock fragments, and in pores; stone line at upper boundary; 45 percent gravel, 10 percent cobbles, and 10 percent paragravel; neutral (pH 6.8); clear wavy boundary.
- 3Btb3—46 to 60 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy clay loam, dark brown (7.5YR 3/3) moist; moderate fine subangular blocky

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structure; hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine tubular pores; many distinct pressure faces on peds; common distinct strong brown (7.5YR 4/6) clay films on faces of peds, on rock fragments, and in pores; 50 percent gravel, 15 percent cobbles, and 10 percent paragravel; neutral (pH 6.8).

Thickness of mollic epipedon: 14 to 20 inches

Particle-size control section: Averages 22 to 33 percent clay and 0 to 15 percent rock fragments

Ap horizon:

Content of clay—10 to 13 percent

Reaction—slightly acid to strongly acid

AB horizon:

Value—2 or 3 moist

Texture—fine sandy loam or very fine sandy loam

Content of clay—10 to 13 percent

Reaction—slightly acid to strongly acid

Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—sandy clay loam, fine sandy loam, or very fine sandy loam

Content of clay—averages 22 to 33 percent

Reaction—moderately acid to neutral

2Btb and 3Btb horizons:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly sandy clay or very gravelly sandy clay loam in the upper part and extremely gravelly sandy clay loam, extremely gravelly sandy clay, or very gravelly sandy clay loam in the lower part

Content of clay—30 to 40 percent

Metmill Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Alluvial fans

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic Haploxerolls

Typical pedon of Metmill very gravelly ashy loam in Kittitas County, Washington, about 6 miles north of Ellensburg; about 2,330 feet east and 1,020 feet south of the northwest corner of section 35, T. 19 N., R. 18 E.; Ellensburg North, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 6 minutes 0 seconds north and longitude 120 degrees 33 minutes 4 seconds west; NAD 83.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) very gravelly ashy loam, black (10YR 2/1) moist; moderate fine and medium granular structure; slightly hard,

very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular and few very fine irregular pores; 29 percent gravel and 10 percent cobbles; NaF pH 8.6; neutral (pH 7.2); abrupt smooth boundary.

AB—6 to 14 inches; dark grayish brown (10YR 4/2) ashy loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine irregular and tubular pores; 5 percent gravel; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

Bw1—14 to 22 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, black (10YR 2/1) moist; strong fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and medium roots; common very fine tubular and few very fine irregular pores; 30 percent gravel and 10 percent cobbles; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

Bw2—22 to 34 inches; dark grayish brown (10YR 4/2) extremely gravelly sandy clay loam, very dark brown (10YR 2/2) moist; strong fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and medium roots; common very fine tubular and irregular pores; few fine faint dark yellowish brown (10YR 4/6) iron stains on faces of peds and in pores; 50 percent gravel and 15 percent cobbles; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

Bw3—34 to 60 inches; dark grayish brown (10YR 4/2) extremely gravelly sandy clay loam, very dark brown (10YR 2/2) moist; strong fine and medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; few very fine roots; common fine distinct dark yellowish brown (10YR 4/6) iron stains on faces of peds and in pores; 50 percent gravel and 10 percent cobbles; NaF pH 8.6; neutral (pH 7.2).

Thickness of mollic epipedon: 30 to 60 inches

Thickness of volcanic ash influence: 7 to 18 inches

Irrigation-induced water table: Present some time during the irrigation season

Particle-size control section: Averages 26 to 34 percent clay and 35 to 60 percent rock fragments

Ap horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—ashy loam or very gravelly ashy loam

Content of clay—20 to 25 percent

Reaction—slightly acid or neutral

AB and Bw1 horizons

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—ashy loam or gravelly ashy loam

Content of clay—25 to 30 percent

Bw2 and Bw3 horizons

Value—4 or 5 dry, 2 or 3 moist

Texture—extremely gravelly sandy clay loam, very gravelly clay loam, or very gravelly sandy clay loam

Content of clay—27 to 34 percent

Metser Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Terraces and alluvial fans

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Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,500 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine, smectitic, mesic Aquic Haploxererts

Typical pedon of Metser clay loam in Kittitas County, Washington, about 2 miles southeast of Thorp; about 2,400 feet south and 1,650 feet west of the northeast corner of section 24, T. 18 N., R. 17 E.; Thorp, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 2 minutes 12 seconds north and longitude 120 degrees 39 minutes 6 seconds west; NAD 83.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) clay loam, black (10YR 2/1) moist; moderate fine and medium granular structure; hard, firm, moderately sticky and moderately plastic; many very fine roots; common very fine irregular and tubular pores; 0.75- to 1.00-inch vertical cracks; NaF pH 8.5; neutral (pH 6.9); abrupt smooth boundary.

A—9 to 15 inches; dark grayish brown (10YR 4/2) clay, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm, moderately sticky and very plastic; common very fine roots; common very fine tubular pores; 0.5-inch vertical cracks; NaF pH 8.6; neutral (pH 7.0); abrupt wavy boundary.

Bss1—15 to 20 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm, moderately sticky and very plastic; common very fine roots; common very fine tubular pores; common distinct intersecting slickensides; 0.25-inch vertical cracks; common prominent coatings that are black (10YR 2/1) moist and are on faces of peds; 5 percent gravel; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

Bss2—20 to 30 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm, moderately sticky and very plastic; few very fine roots; common very fine irregular and tubular pores; common distinct intersecting slickensides; common prominent coatings that are black (10YR 2/1) moist and are on faces of peds; 10 percent gravel; NaF pH 8.5; neutral (pH 7.2); abrupt wavy boundary.

2Bss3—30 to 37 inches; grayish brown (10YR 5/2) very gravelly sandy clay, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm, moderately sticky and very plastic; few very fine roots; common very fine irregular and tubular pores; few fine faint yellowish brown (10YR 5/6) iron stains on faces of peds, in pores, and on rock fragments; common distinct intersecting slickensides; 40 percent gravel and 10 percent cobbles; NaF pH 8.5; neutral (pH 7.0); clear wavy boundary.

2Bss4—37 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sandy clay, very dark grayish brown (10YR 3/2) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; common very fine irregular and tubular pores; common fine faint yellowish brown (10YR 5/6) iron stains on faces of peds, in pores, and on rock fragments; few fine distinct yellowish brown (10YR 5/6) iron nodules with sharp boundaries; few distinct intersecting slickensides; 55 percent gravel and 20 percent cobbles; NaF pH 8.5; neutral (pH 7.2).

Thickness of mollic epipedon: 30 to 60 inches

Irrigation-induced water table: Present some time during the irrigation season

Particle-size control section: Averages 40 to 55 percent clay and 15 to 35 percent rock fragments

Ap and A horizons:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Content of clay—30 to 55 percent

Reaction—neutral or slightly acid

Bss horizon:

Hue—10YR or 2.5Y

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—40 to 55 percent

2Bss horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly sandy clay or very gravelly clay in the upper part and extremely gravelly sandy clay, very gravelly sandy clay loam, or extremely gravelly sandy clay loam

Content of clay—40 to 55 percent in the upper part and 30 to 45 percent in the lower part

Content of rock fragments—30 to 50 percent gravel, 5 to 15 percent cobbles, and 0 to 5 percent stones in the upper part and 35 to 70 percent gravel, 5 to 20 percent cobbles, and 0 to 10 percent stones in the lower part

Meystre Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Slopes of foothills

Parent material: Loess and residuum derived from sandstone

Slope range: 0 to 45 percent

Elevation: 2,000 to 4,500 feet

Mean annual precipitation: 15 to 22 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 130 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Ultic Argixerolls

Typical pedon of Meystre loam in Yakima County, Washington; 2,500 feet west and 1,900 feet south of the northeast corner of section 2, T. 16 N., R. 16 E.; Hudson Creek, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 54 minutes 21 seconds north and longitude 120 degrees 47 minutes 25 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed forest litter.

A1—1 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; soft, very friable, nonsticky and slightly plastic; common fine roots; slightly acid (pH 6.4); abrupt smooth boundary.

A2—4 to 12 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common fine roots; slightly acid (pH 6.4); clear wavy boundary.

Bt1—12 to 19 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic;

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common fine roots; few fine tubular pores; few faint patchy clay films on faces of peds; slightly acid (pH 6.4); clear wavy boundary.

Bt2—19 to 30 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; few fine tubular pores; common distinct clay films on faces of peds; slightly acid (pH 6.4); clear wavy boundary.

Bt3—30 to 42 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; very hard, friable, nonsticky and nonplastic; few medium roots; few fine tubular pores; common distinct clay films in root channels; neutral (pH 6.6); abrupt smooth boundary.

C—42 to 61 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, friable, nonsticky and nonplastic; few medium roots; few fine tubular pores; neutral (pH 6.6).

Thickness of mollic epipedon: 10 to 18 inches

Particle-size control section: 25 to 35 percent clay and 0 to 5 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Texture—loam or stony loam

Content of clay—10 to 20 percent

Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—clay loam, sandy clay loam, or loam

Content of clay—25 to 35 percent

C horizon:

Texture—fine sandy loam, sandy clay loam, or sandy loam

Content of clay—10 to 35 percent

Reaction—neutral or slightly acid

Millhouse Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Alluvial fans and terraces

Parent material: Alluvium with loess and volcanic ash in the upper part

Slope range: 0 to 10 percent

Elevation: 1,700 to 3,400 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Millhouse cobbly ashy loam in Kittitas County, Washington; about 2,870 feet west and 1,360 feet south of the northeast corner of section 12, T. 17 N., R. 17 E.; Manastash Creek, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 58 minutes 53 seconds north and longitude 120 degrees 39 minutes 24 seconds west; NAD 83.

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- A—0 to 4 inches; dark grayish brown (10YR 4/2) cobbly ashy loam, very dark brown (10YR 2/2) moist; weak medium platy structure parting to weak thin platy; soft, very friable, slightly sticky and slightly plastic; many very fine and few medium and coarse roots; common very fine irregular pores; 14 percent gravel and 10 percent cobbles; NaF pH 8.5; neutral (pH 7.0); clear smooth boundary.
- AB—4 to 14 inches; dark grayish brown (10YR 4/2) very gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly plastic and slightly sticky; common very fine and few medium and coarse roots; few very fine irregular pores; 35 percent gravel and 5 percent cobbles; NaF pH 8.5; neutral (pH 7.0); clear wavy boundary.
- Bt—14 to 28 inches; dark grayish brown (10YR 4/2) extremely gravelly sandy clay loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; common very fine and few medium and coarse roots; pockets of dark brown (10YR 3/3) loamy sand; common distinct patchy dark yellowish brown (10YR 4/4) clay films lining pores and on faces of peds; 55 percent gravel and 10 percent cobbles; NaF pH 8.0; neutral (pH 7.0); clear wavy boundary.
- 2C1—28 to 32 inches; dark grayish brown (10YR 4/2) extremely gravelly loamy sand, very dark brown (10YR 2/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and few medium and coarse roots; 65 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0); clear wavy boundary.
- 2C2—32 to 60 inches; brown (10YR 4/3) extremely gravelly loamy sand, very dark brown (10YR 2/2) moist; single grain; loose, nonsticky and nonplastic; few very fine, medium, and coarse roots; 70 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0)

Thickness of mollic epipedon: 20 to 35 inches

Thickness of volcanic ash influence: 11 to 18 inches

Depth to extremely gravelly loamy sand: 20 to 40 inches

Particle-size control section: 20 to 25 percent clay and 55 to 70 percent rock fragments

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—gravelly ashy loam, ashy loam, cobbly ashy loam, or very cobbly ashy loam

Content of clay—14 to 17 percent

Reaction—slightly acid or neutral

AB horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly ashy loam, very gravelly ashy sandy loam, or extremely gravelly ashy loam

Content of clay—14 to 17 percent

Reaction—slightly acid or neutral

Bt horizon:

Value—3 or 4 dry, 2 or 3 moist

Texture—extremely gravelly sandy clay loam, very gravelly loam, or very gravelly sandy clay loam

Content of clay—20 to 25 percent

2C horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—extremely gravelly loamy sand, extremely cobbly loamy sand, or extremely gravelly sand
Content of clay—0 to 10 percent

Mippon Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Stream terraces

Parent material: Alluvium

Slope range: 0 to 3 percent

Elevation: 1,800 to 4,800 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Taxonomic classification: Sandy-skeletal, mixed, frigid Fluventic Haploxerolls

Typical pedon of Mippon very cobbly loam in Kittitas County, Washington, about 9 miles northeast of Ellensburg; 1,580 feet east and 1,250 feet south of the northwest corner of section 16, T. 19 N., R. 19 E.; Naneum Canyon, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 8 minutes 34 seconds north and longitude 120 degrees 28 minutes 11 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter.

A—1 to 12 inches; very dark grayish brown (10YR 3/2) very cobbly loam, very dark brown (10YR 2/2) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few very fine irregular pores; 20 percent gravel and 40 percent cobbles; neutral (pH 6.6); abrupt smooth boundary.

AC—12 to 18 inches; brown (10YR 4/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; 50 percent gravel and 10 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

C1—18 to 33 inches; brown (10YR 4/3) extremely cobbly loamy sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine and few coarse roots; 30 percent gravel and 40 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

C2—33 to 60 inches; brown (10YR 4/3) extremely gravelly sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; 60 percent gravel and 10 percent cobbles; neutral (pH 6.6).

Thickness of mollic epipedon: 10 to 17 inches

Depth to sandy material: 10 to 27 inches

Water table: Present some time during the year

Particle-size control section: Averages 2 to 8 percent clay and 50 to 90 percent rock fragments

Reaction: Slightly acid or neutral throughout

A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry, 1 to 3 moist

Content of clay—7 to 15 percent

AC horizon:

Value—4 to 6 dry

Chroma—3 to 6 dry, 2 to 4 moist

Texture—very cobbly loam, very gravelly sandy loam, or very cobbly loamy sand

Content of clay—2 to 10 percent

C horizon:

Value—4 to 6 dry, 2 or 3 moist

Chroma—2 to 4 dry, 2 or 3 moist

Texture—extremely cobbly loamy sand, extremely gravelly sand, or very cobbly sand

Content of clay—0 to 5 percent

Mitta Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Flood plains and alluvial fans

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 2 percent

Elevation: 1,400 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Mitta ashy silt loam in Kittitas County, Washington, about 1 mile south of Kittitas; about 1,040 feet west and 1,450 feet south of the northeast corner of section 14, T. 17 N., R. 19 E.; Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 58 minutes 1 second north and longitude 120 degrees 25 minutes 3 seconds west; NAD 83.

Ap—0 to 6 inches; dark gray (10YR 4/1) ashy silt loam, black (10YR 2/1) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and few very fine tubular pores; slightly effervescent; sodium adsorption ratio of 1; calcium carbonate equivalent of 1 percent; NaF pH 9.5; moderately alkaline (pH 8.0); abrupt smooth boundary.

A1—6 to 15 inches; dark gray (10YR 4/1) ashy silt loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common very fine tubular pores; slightly effervescent; NaF pH 9.5; moderately alkaline (pH 8.0); abrupt wavy boundary.

A2—15 to 24 inches; dark gray (10YR 4/1) ashy silt loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common very fine tubular pores; NaF pH 9.2; slightly alkaline (pH 7.7); clear wavy boundary.

AB—24 to 34 inches; grayish brown (10YR 5/2) ashy silt loam, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and very few fine tubular pores; NaF pH 9.2; slightly alkaline (pH 7.5); clear wavy boundary.

2BA—34 to 49 inches; silty clay loam that has variegated color of 85 percent grayish brown (10YR 5/2), very dark grayish brown (10YR 3/2) moist, and 15 percent light yellowish brown (2.5Y 6/3), olive brown (2.5Y 4/3) moist; weak medium prismatic structure parting to weak fine subangular blocky; hard, friable, moderately sticky and moderately plastic; few very fine roots; many very fine irregular and many very fine and few fine tubular pores; few fine rounded iron-manganese redoximorphic

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concretions with sharp boundary; NaF pH 9.0; slightly alkaline (pH 7.5); clear wavy boundary.

2Bw—49 to 60 inches; silty clay loam that has variegated color of 65 percent grayish brown (10YR 5/2), very dark grayish brown (10YR 3/2) moist, and 35 percent light yellowish brown (2.5Y 6/3), olive brown (2.5Y 4/3) moist; moderate fine subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; few very fine roots; many very fine irregular and common very fine tubular pores; few distinct iron masses on vertical and horizontal faces of peds; few fine rounded iron-manganese redoximorphic concretions with sharp boundary; 10 percent gravel; NaF pH 8.5; slightly alkaline (pH 7.5).

Thickness of mollic epipedon: 25 to 45 inches

Thickness of volcanic ash influence: 25 to 40 inches

Irrigation-induced water table: Present some time during the irrigation season

Particle-size control section: Averages 19 to 25 percent clay in the upper part and 25 to 30 percent clay and 0 to 10 percent rock fragments in the lower part

Ap and A1 horizons:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Content of clay—19 to 25 percent

Sodium adsorption ratio—0 to 10

Reaction—moderately alkaline or strongly alkaline

A2 and AB horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—ashy silt loam or ashy loam

Content of clay—19 to 25 percent

Sodium adsorption ratio—0 to 5

Reaction—slightly alkaline or moderately alkaline

2BA horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—clay loam, silt loam, or silty clay loam

Content of clay—25 to 30 percent

Sodium adsorption ratio—0 to 5

Reaction—slightly alkaline or moderately alkaline

2Bw horizon:

Value—4 to 6 dry, 2 to 4 moist

Chroma—2 or 3 dry or moist

Texture—clay loam, loam, or silty clay loam

Content of clay—25 to 30 percent

Sodium adsorption ratio—1 to 5

Modsel Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,700 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

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Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Vitrandic Argixerolls

Typical pedon of Modsel ashy loam in Kittitas County, Washington, about 6 miles north of Ellensburg; about 1,250 feet east and 2,030 feet north of the southwest corner of section 34, T. 19 N., R. 18 E.; Ellensburg North, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 5 minutes 38 seconds north and longitude 120 degrees 34 minutes 30 seconds west; NAD 83.

- Ap—0 to 7 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; few very fine tubular pores; 5 percent gravel; NaF pH 8.5; neutral (pH 7.2); abrupt smooth boundary.
- BAt—7 to 10 inches; dark grayish brown (10YR 4/2) clay loam, very dark brown (10YR 2/2) moist; strong fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine roots; common very fine tubular and irregular pores; few faint clay films lining pores and on faces of peds; 5 percent gravel; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.
- Bt1—10 to 16 inches; brown (10YR 5/3) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; strong fine and medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine tubular pores; few faint clay films on faces of peds and in pores; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; 25 percent gravel and 5 percent cobbles; NaF pH 8.6; neutral (pH 7.2); abrupt wavy boundary.
- 2Bt2—16 to 20 inches; brown (10YR 5/3) very gravelly clay, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; few distinct clay films lining pores and on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; 45 percent gravel and 15 percent cobbles; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.
- 2Bt3—20 to 37 inches; brown (10YR 5/3) very gravelly clay, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; common very fine irregular and tubular pores; few distinct clay films on faces of peds and in pores; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; 45 percent gravel and 15 percent cobbles; NaF pH 8.6; neutral (pH 7.2); abrupt smooth boundary.
- 2Bt4—37 to 56 inches; brown (10YR 5/3) extremely gravelly sandy clay loam, dark brown (10YR 3/3) moist; strong fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine roots; many very fine irregular pores; few distinct clay films on faces of peds and in pores; common distinct strong brown (7.5YR 4/6) iron stains on faces of peds and in pores; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; 40 percent gravel and 25 percent cobbles; NaF pH 8.5; neutral (pH 7.2); clear wavy boundary.
- 2Bt5—56 to 60 inches; yellowish brown (10YR 5/4) extremely gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine irregular pores; few faint clay films on faces of peds and in pores; common fine distinct iron stains on faces of peds and in pores; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; 40 percent gravel and 25 percent cobbles; NaF pH 8.5; neutral (pH 7.2).

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Thickness of mollic epipedon: 30 to 60 inches

Thickness of volcanic ash influence: 7 to 14 inches

Irrigation-induced water table: Present some time during the irrigation season

Particle-size control section: 35 to 40 percent clay and 35 to 50 percent rock fragments

Ap horizon:

Value—3 or 4 dry

Texture—ashy loam or cobbly ashy loam

Content of clay—20 to 25 percent

Reaction—slightly acid or neutral

BAt horizon:

Value—3 or 4 dry, 2 or 3 moist

Texture—gravelly clay loam, cobbly clay loam, or clay loam

Content of clay—30 to 35 percent

Bt horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—gravelly clay loam or cobbly clay loam

Content of clay—35 to 40 percent

2Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—extremely gravelly sandy clay loam, very gravelly clay, extremely gravelly clay, extremely cobbly clay loam, very gravelly sandy clay, or extremely gravelly sandy clay loam

Content of clay—30 to 45 percent

Mozen Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes and dissected plateaus

Parent material: Slope alluvium and residuum derived from basalt mixed with loess and volcanic ash in the upper part

Slope range: 3 to 30 percent

Elevation: 1,300 to 3,300 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 120 to 140 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Mozen ashy silt loam in Kittitas County, Washington, about 7.5 miles south of Ellensburg; about 900 feet east and 900 feet north of the southwest corner of section 5, T. 16 N., R. 18 E.; Ellensburg South, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 54 minutes 4 seconds north and longitude 120 degrees 36 minutes 33 seconds west; NAD 83.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) ashy silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few medium roots; many very fine irregular pores; neutral (pH 6.8); clear smooth boundary.

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- A2—5 to 10 inches; dark grayish brown (10YR 4/2) ashy silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few medium roots; many very fine irregular pores; neutral (pH 6.8); clear wavy boundary.
- AB—10 to 13 inches; brown (10YR 5/3) ashy silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and few very fine tubular pores; neutral (pH 7.0); abrupt wavy boundary.
- 2Bt—13 to 22 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and moderately plastic; common very fine roots between peds and few very fine roots in peds; many very fine irregular and few very fine tubular pores; few faint pressure faces on peds and few faint clay bridges in pores; 15 percent very coarse cylindrical cicada casts; slightly alkaline (pH 7.4); abrupt wavy boundary.
- 2Btkb—22 to 28 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, firm, slightly sticky and slightly plastic; few very fine roots; many very fine irregular and common very fine tubular pores; few faint pressure faces on peds and few faint clay bridges in pores; common distinct lime coatings on faces of peds and few distinct lime coatings lining pores; 15 percent very coarse cylindrical cicada casts; 5 percent gravel; moderately alkaline (pH 8.2); clear wavy boundary.
- 2Btb—28 to 36 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium and coarse prismatic structure; very hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine irregular and tubular pores; common faint pressure faces on peds and few faint clay bridges in pores; 15 percent coarse cylindrical cicada casts; 5 percent gravel; slightly alkaline (pH 7.4); abrupt wavy boundary.
- 2Bwb—36 to 39 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and few medium roots; many very fine irregular and common very fine tubular pores; 10 percent gravel; slightly alkaline (pH 7.4); abrupt wavy boundary.
- 3R—39 inches; fractured basalt.

Thickness of mollic epipedon: 20 to 35 inches

Thickness of volcanic ash influence: 12 to 18 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: Averages 27 to 33 percent clay and 0 to 15 percent rock fragments

A horizon:

Texture—ashy silt loam or ashy loam

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or ashy silt loam

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline

2Bt horizon:

Value—4 or 5 dry

Content of clay—27 to 33 percent

Content of rock fragments—0 to 14 percent gravel

Reaction—neutral or slightly alkaline

2Btkb, 2Btb, and 2Bwb horizons:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—loam, clay loam, or gravelly clay loam

Content of clay—22 to 33 percent

Calcium carbonate equivalent—0 to 15 percent

Reaction—slightly alkaline or moderately alkaline

Myzel Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Flood plains and alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 3 percent

Elevation: 1,800 to 4,800 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Taxonomic classification: Fine-loamy, isotic, frigid Vitrandic Haploxerolls

Typical pedon of Myzel ashy sandy clay loam in Kittitas County, Washington, about 2.5 miles east of Cle Elum; about 100 feet north and 1,100 feet east of the southwest corner of section 33, T. 20 N., R. 16 E.; Teanaway, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 11 minutes 24 seconds and longitude 120 degrees 51 minutes 4 seconds west; NAD 83.

Ap—0 to 6 inches; very dark gray (10YR 3/1) ashy sandy clay loam, black (10YR 2/1) moist; moderate medium and coarse granular structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine roots; many very fine irregular pores; NaF pH 8.5; neutral (pH 6.6); abrupt smooth boundary.

A1—6 to 11 inches; very dark gray (10YR 3/1) ashy sandy clay loam, black (10YR 2/1) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine roots; common very fine irregular pores; NaF pH 8.5; neutral (pH 6.8); clear wavy boundary.

A2—11 to 22 inches; dark gray (10YR 4/1) ashy sandy clay loam, black (10YR 2/1) moist; moderate medium and coarse subangular block structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine roots; common very fine irregular and tubular pores; NaF pH 8.5; neutral (pH 6.8); clear wavy boundary.

AB—22 to 38 inches; grayish brown (10YR 5/2) ashy sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse subangular blocky structure; hard, firm, moderately sticky and very plastic; common very fine roots; common very fine irregular and tubular pores; NaF pH 8.7; neutral (pH 6.8); clear wavy boundary.

2Bw1—38 to 57 inches; grayish brown (10YR 5/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; common distinct yellowish brown (10YR 5/6) iron redoximorphic concentrations on faces of peds; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few medium and common very fine roots; few medium irregular and many very fine irregular and tubular pores; NaF pH 8.0; neutral (pH 6.8); clear wavy boundary.

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2Bw2—57 to 60 inches; light brownish gray (10YR 6/2) sandy clay, very dark grayish brown (10YR 3/2) moist; common distinct yellowish brown (10YR 5/6) iron redoximorphic concentrations on faces of peds; moderate medium and coarse subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; NaF pH 8.0; neutral (pH 6.8).

Thickness of mollic epipedon: 25 to 60 inches

Thickness of volcanic ash influence: 10 to 40 inches

Water table: Present some time during the year

Particle-size control section: 27 to 35 percent clay and 0 to 10 percent rock fragments

Reaction: Slightly acid or neutral throughout

Ap and A horizons:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Content of clay—27 to 33 percent

Reaction—slightly alkaline or moderately alkaline

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—ashy sandy clay loam or ashy clay loam

Content of clay—27 to 33 percent

Reaction—slightly alkaline or moderately alkaline

2Bw horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—sandy clay loam or clay loam in the upper part and sandy clay loam, gravelly sandy clay loam, or very gravelly sandy clay loam in the lower part

Content of clay—27 to 35 percent

Reaction—slightly alkaline or moderately alkaline

Nack Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,400 to 3,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Pachic Palexerolls

Typical pedon of Nack ashy loam in Kittitas County, Washington, about 1 mile east of Ellensburg; 2,250 feet north and 600 feet east of the southwest corner of section 5, T. 17 N., R. 19 E.; latitude 46 degrees 59 minutes 31 seconds north and longitude 120 degrees 29 minutes 40 seconds west; NAD 83.

Ap—0 to 6 inches; brown (10YR 4/3) ashy loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure parting to weak fine granular; hard, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

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- Btk1—6 to 12 inches; brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine faint white (10YR 8/1) seams of calcium carbonate; few faint dark yellowish brown (10YR 4/6) clay films lining pores and on faces of peds; common very fine tubular pores; 10 percent gravel; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
- Btk2—12 to 15 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and few fine continuous tubular pores; common distinct white (10YR 8/1) carbonate in pores and on faces of peds; common distinct dark yellowish brown (10YR 4/6) clay films lining pores and on faces of peds; 10 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.
- 2Bt1—15 to 39 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy clay, dark brown (10YR 3/3) moist; massive; very hard, firm, sticky and plastic; few very fine roots; common fine tubular and few fine irregular pores; many distinct dark yellowish brown (10YR 4/6) clay films on sand and rock fragments; few fine distinct yellowish red (5YR 5/8) redoximorphic concentrations; 55 percent gravel and 25 percent cobbles; slightly alkaline (pH 7.6); clear wavy boundary.
- 2Bt2—39 to 60 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy clay loam, dark brown (10YR 3/3) moist; massive; very hard, firm, sticky and plastic; few very fine roots; few fine irregular pores; many distinct dark yellowish brown (10YR 4/6) clay films on sand and gravel, dark brown (10YR 3/3) moist; common coarse distinct yellowish red (5YR 5/8) redoximorphic concentrations; 55 percent gravel and 25 percent cobbles; slightly alkaline (pH 7.6).

Thickness of mollic epipedon: More than 60 inches

Thickness of volcanic ash influence: 4 to 7 inches

Irrigation-induced water table: Present some time during the irrigation season

Depth to extremely gravelly material: 12 to 20 inches

Particle-size control section: 25 to 35 percent clay and averages 35 to 50 percent rock fragments

Ap horizon:

Value—3 to 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or gravelly ashy loam

Content of clay—18 to 25 percent

Calcium carbonate equivalent—0 to 5 percent

Btk horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—clay loam, sandy clay loam, or gravelly sandy clay loam

Content of clay—25 to 30 percent

Calcium carbonate equivalent—1 to 15 percent

Reaction—moderately alkaline or strongly alkaline

2Bt horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—3 or 4 dry or moist

Texture—extremely gravelly sandy clay loam, extremely gravelly sandy clay, or extremely cobbly sandy clay loam

Content of clay—25 to 40 percent

Calcium carbonate equivalent—0 to 5 percent
Reaction—slightly alkaline or moderately alkaline

Nanum Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Alluvial fans and terraces

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,400 to 3,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Haploxerolls

Typical pedon of Nanum ashy loam in Kittitas County, Washington, about 4 miles north of Ellensburg; about 540 feet west and 2,430 feet north of the southeast corner of section 7, T. 18 N., R. 19 E.; Colockum Pass SW, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 3 minutes 55 seconds north and longitude 120 degrees 30 minutes 0 seconds west; NAD 83.

- Ap—0 to 8 inches; dark gray (10YR 4/1) ashy loam, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common very fine tubular pores; NaF pH 8.6; neutral (pH 7.0); clear wavy boundary.
- A—8 to 15 inches; dark grayish brown (10YR 4/2) ashy loam, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common very fine tubular pores; NaF pH 8.6; neutral (pH 6.8); clear wavy boundary.
- AB1—15 to 21 inches; grayish brown (10YR 5/2) ashy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, firm, moderately sticky and moderately plastic; many very fine roots; many very fine irregular and common very fine tubular pores; 5 percent gravel; NaF pH 8.6; neutral (pH 6.8); clear wavy boundary.
- AB2—21 to 28 inches; grayish brown (10YR 5/2) ashy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine irregular and tubular pores; few fine faint dark yellowish brown (10YR 4/6) iron stains on faces of peds and in pores; few fine iron-manganese concretions with sharp boundary; 5 percent gravel; NaF pH 8.6; neutral (pH 6.8); abrupt wavy boundary.
- 2Bw1—28 to 35 inches; grayish brown (10YR 5/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; strong medium prismatic structure parting to strong medium subangular blocky; very hard, firm, moderately sticky and moderately plastic; few very fine roots; many very fine irregular pores; common fine faint dark yellowish brown (10YR 4/6) iron concentrations in pores and iron stains on faces of peds and rock fragments; 30 percent gravel and 10 percent cobbles; neutral (pH 6.8); clear wavy boundary.
- 2Bw2—35 to 48 inches; grayish brown (10YR 5/2) extremely gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few fine roots; many very fine irregular pores; common fine distinct dark yellowish brown (10YR 4/6)

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iron concentrations in pores and iron stains on faces of peds and rock fragments; 55 percent gravel and 20 percent cobbles; neutral (pH 6.8); clear wavy boundary. 2Bw3—48 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; many very fine irregular and few very fine tubular pores; common fine distinct dark yellowish brown (10YR 4/6) iron concentrations on faces of peds, in pores, and on rock fragments; 60 percent gravel and 25 percent cobbles; neutral (pH 6.8).

Thickness of mollic epipedon: 30 to 60 inches

Thickness of volcanic ash influence: 20 to 40 inches

Irrigation-induced water table: Present some time during the irrigation season

Particle-size control section: 27 to 35 percent clay and averages 15 to 33 percent rock fragments

Ap horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—ashy loam or ashy sandy clay loam

Content of clay—22 to 27 percent

Reaction—slightly acid to slightly alkaline

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—ashy clay loam, ashy loam, or ashy sandy clay loam

Content of clay—25 to 33 percent

Reaction—neutral or slightly alkaline

AB horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—ashy clay loam, ashy sandy clay loam, or ashy sandy clay

Content of clay—27 to 35 percent

Reaction—neutral or slightly alkaline

2Bw horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly clay loam or very gravelly sandy clay loam in the upper part and extremely gravelly sandy clay loam, very gravelly sandy clay loam, or extremely gravelly clay loam in the lower part

Content of clay—27 to 35 percent

Reaction—neutral to moderately alkaline

Nard Series

Depth class: Deep and very deep

Drainage class: Moderately well drained

Position on landscape: Mountain slopes and terraces

Parent material: Residuum and colluvium derived from sandstone and old alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 65 percent

Elevation: 1,800 to 5,400 feet

Mean annual precipitation: 20 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

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Taxonomic classification: Fine-loamy, isotic, frigid Vitrandic Haploxeralfs

Typical pedon of Nard ashy loam in Kittitas County, Washington, about 8 miles northeast of Cle Elum and 3 miles north on Story Creek Road; 1,350 feet east and 2,200 feet north of the southwest corner of section 28, T. 21 N., R. 16 E.; Redtop Mountain, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 16 minutes 48 seconds north and longitude 120 degrees 50 minutes 43 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed needles and twigs.

A—1 to 4 inches; brown (10YR 5/3) ashy loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; NaF pH 9.0; slightly acid (pH 6.4); abrupt smooth boundary.

E—4 to 12 inches; pale brown (10YR 6/3) ashy loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common coarse roots; common very fine irregular pores; NaF pH 9.0; moderately acid (pH 6.0); abrupt smooth boundary.

E/Bt—12 to 24 inches; about 65 percent (E part) very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; about 35 percent (Bt part) light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; few faint yellowish brown (10YR 5/6) clay films on faces of peds and in pores; NaF pH 8.5; moderately acid (pH 5.8); clear wavy boundary.

Bt—24 to 34 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots between peds; common very fine irregular and tubular pores in peds and very few fine irregular and tubular pores on faces of coarse prisms; common distinct brown (7.5YR 5/4) clay films on faces of peds and in pores; NaF pH 8.5; moderately acid (pH 5.8); clear wavy boundary.

Btx1—34 to 51 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; very coarse prismatic structure parting to moderate medium subangular blocky; very hard, firm and brittle, moderately sticky and moderately plastic; common very fine, fine, and coarse roots between peds; common very fine irregular and tubular inped pores and few very fine irregular and tubular pores on faces of very coarse prisms; common distinct brown (7.5YR 5/4) clay films in pores and on faces of peds and many prominent brown (7.5YR 5/4) clay films on faces of coarse prisms; few distinct light gray (10YR 7/2) patches of skeletons on vertical faces of coarse prisms; NaF pH 8.0; strongly acid (pH 5.4); clear wavy boundary.

Btx2—51 to 60 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; very hard, firm and brittle, moderately sticky and moderately plastic; few very fine and fine roots between peds; common very fine irregular and tubular inped pores and few fine irregular and tubular pores on faces of peds; common faint and distinct dark yellowish brown (10YR 4/6) and strong brown (7.5YR 5/6) clay films in pores and on faces of peds; few distinct light gray (10YR 7/2) patches of skeletons on faces of peds; NaF pH 8.0; strongly acid (pH 5.4).

Thickness of volcanic ash influence: 7 to 14 inches

Depth to bedrock: 40 to 60 inches or more

Perched water table: Present some time during the year

Particle-size control section: 18 to 35 percent clay and 0 to 10 percent rock fragments

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A horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—1 to 3 dry or moist
Texture—ashy loam or stony ashy loam
Content of clay—11 to 13 percent
Reaction—neutral to moderately acid

E and E/Bt horizons:

E part

Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 moist
Texture—ashy loam or ashy silt loam
Content of clay—11 to 13 percent
Reaction—neutral to moderately acid

Bt part

Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, silt loam, or loam
Content of clay—18 to 28 percent
Reaction—neutral to moderately acid

Bt and Btx horizons:

Hue—10YR or 7.5YR
Value—4 to 7 dry, 4 or 5 moist
Chroma—2 to 6 dry or moist
Texture—clay loam, silty clay loam, loam, or gravelly clay loam
Content of clay—20 to 35 percent
Reaction—neutral to moderately acid

Natkim Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes and glacial valleys

Parent material: Glacial till and colluvium derived from andesite and basalt mixed with volcanic ash

Slope range: 5 to 75 percent

Elevation: 2,200 to 5,000 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 120 days

Taxonomic classification: Ashy-skeletal, glassy, frigid Typic Vitrixerands

Typical pedon of Natkim gravelly ashy sandy loam in Kittitas County, Washington, about 6.5 miles south of Salmon la Sac; 3,200 feet south and 1,370 feet east of the northwest corner of section 16, T. 21 N., R. 14 E.; Cle Elum Lake, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 18 minutes 36 seconds north and longitude 121 degrees 5 minutes 56 seconds west; NAD 83.

Oi—0 to 0.5 inch; slightly decomposed forest litter; abrupt wavy boundary.

Oe—0.5 to 1 inch; moderately decomposed forest litter; abrupt wavy boundary.

A—1 to 8 inches; dark yellowish brown (10YR 4/4) gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine roots;

25 percent angular basalt gravel and 5 percent rounded cobbles; NaF pH 11.0; slightly acid (pH 6.4); clear wavy boundary.

Bw1—8 to 18 inches; strong brown (7.5YR 5/6) very cobbly ashy sandy loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine roots; few very fine tubular pores; 20 percent angular basalt gravel and 30 percent rounded cobbles; NaF pH 11.0; moderately acid (pH 5.8); gradual wavy boundary.

Bw2—18 to 40 inches; yellowish brown (10YR 5/6) very cobbly ashy sandy loam, dark yellowish brown (10YR 3/6) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium and coarse roots; few very fine tubular pores; 20 percent rounded gravel and 30 percent rounded cobbles; NaF pH 11.0; moderately acid (pH 6.0); abrupt wavy boundary.

2C—40 to 61 inches; light olive brown (2.5Y 5/4) extremely cobbly sandy loam, olive brown (2.5Y 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and medium roots; 30 percent rounded gravel and 35 percent rounded cobbles; NaF pH 8.5; slightly acid (pH 6.4).

Thickness of volcanic ash influence: 36 to 45 inches

Particle-size control section: 5 to 15 percent clay and 35 to 75 percent rock fragments

Reaction: Moderately acid or slightly acid throughout

A horizon:

Hue—10YR or 7.5YR

Value—3 or 4 moist

Chroma—3 or 4 dry, 2 or 3 moist

Content of clay—5 to 8 percent

Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—very cobbly ashy sandy loam or very cobbly ashy loam

Content of clay—5 to 15 percent

2C horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry

Chroma—4 to 6 dry or moist

Texture—very cobbly sandy loam or extremely cobbly sandy loam

Content of clay—5 to 15 percent

Naxing Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Slopes and summits of mountains

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash and loess

Slope range: 0 to 65 percent

Elevation: 2,200 to 6,500 feet

Mean annual precipitation: 22 to 50 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 30 to 75 days

Taxonomic classification: Ashy over loamy-skeletal, glassy over isotic Xeric Vitricryands

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Typical pedon of Naxing gravelly ashy loam, stony, in Kittitas County, Washington, about 18 miles northeast of Ellensburg; 950 feet west and 600 feet north of southeast corner of section 6, T. 20 N., R. 20 E.; Colockum Pass, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 15 minutes 0 seconds north and longitude 120 degrees 22 minutes 1 second west; NAD 83.

Oi—0 to 2 inches; slightly decomposed needles and twigs; 0.125-inch intermittent ash layer in the lower part; abrupt smooth boundary.

A1—2 to 6 inches; brown (10YR 4/3) gravelly ashy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium and coarse and many fine roots; many fine and medium irregular pores; 15 percent gravel, 5 percent cobbles, and 5 percent stones; NaF pH 10.5; moderately acid (pH 5.7); gradual wavy boundary.

A2—6 to 18 inches; dark yellowish brown (10YR 4/4) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few coarse, common medium, and many very fine roots; many fine and medium irregular pores; 15 percent gravel and 5 percent cobbles; NaF pH 10.5; moderately acid (pH 5.9); gradual wavy boundary.

Bw1—18 to 38 inches; yellowish brown (10YR 5/4) extremely cobbly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few coarse and common medium and very fine roots; many fine and medium irregular pores; 40 percent gravel and 35 percent cobbles; NaF pH 10.0; moderately acid (pH 6.0); gradual wavy boundary.

2Bw2—38 to 57 inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium and common fine and very fine roots; many fine and medium irregular pores; 45 percent gravel and 30 percent cobbles; NaF pH 8.3; slightly acid (pH 6.2); clear wavy boundary.

2Bw3—57 to 60 inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; many fine and medium irregular pores; 45 percent gravel, 30 percent cobbles, and 5 percent stones; NaF pH 8.3; slightly acid (pH 6.2).

Thickness of volcanic ash influence: 20 to 40 inches

Particle-size control section: 5 to 15 percent clay and 45 to 70 percent rock fragments

Reaction: Strongly acid to slightly acid throughout

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist, 2 to 5 dry

Texture—ashy loam, gravelly ashy loam, very gravelly ashy loam, or very gravelly ashy sandy loam

Content of clay—7 to 15 percent

Bw horizon:

Hue—10YR or 7.5YR

Value—5 to 7 dry, 3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—very cobbly ashy sandy loam, extremely cobbly ashy sandy loam, or very cobbly ashy loam

Content of clay—5 to 15 percent

2Bw horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—4 to 6 dry, 3 to 6 moist

Texture—extremely gravelly loam, extremely cobbly sandy loam, or very cobbly sandy loam

Content of clay—5 to 15 percent

Neviot Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes and canyons

Parent material: Colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 30 to 75 percent

Elevation: 1,000 to 3,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic Haploxerolls

Typical pedon of Neviot gravelly ashy loam, stony, in Kittitas County, Washington, about 17 miles south of Kittitas; about 200 feet south and 800 feet west of the northeast corner of section 33, T. 15 N., R. 19 E.; Wymer, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 45 minutes 6 seconds and longitude 120 degrees 26 minutes 49 seconds west; NAD 83.

A—0 to 6 inches; brown (10YR 4/3) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine, medium, and coarse granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine irregular pores; 15 percent gravel, 5 percent cobbles, and 0.1 percent surface stones; NaF pH 8.5; neutral (pH 7.0); clear smooth boundary.

AB—6 to 12 inches; brown (10YR 5/3) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine irregular pores; 25 percent gravel; NaF pH 8.5; neutral (pH 7.0); clear wavy boundary.

BA—12 to 22 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and few very fine tubular pores; 40 percent gravel and 10 percent cobbles; NaF pH 9.0; slightly alkaline (pH 7.4); abrupt wavy boundary.

Bw1—22 to 40 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine irregular and few very fine tubular pores; 40 percent gravel and 10 percent cobbles; stone line at upper boundary; NaF pH 9.0; slightly alkaline (pH 7.4); clear wavy boundary.

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Bw2—40 to 49 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; soft, very friable, slightly sticky and slightly plastic; weak medium prismatic structure parting to weak medium subangular blocky; common very fine and few fine and medium roots; many very fine irregular and few very fine tubular pores; 30 percent gravel, 20 percent cobbles, and 4 percent stones; NaF pH 9.0; moderately alkaline (pH 8.0); clear wavy boundary.

Bk—49 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loam, brown (10YR 4/3) moist; soft, very friable, slightly sticky and slightly plastic; weak fine and medium subangular blocky structure; common very fine and few fine roots; many very fine irregular pores; common prominent very pale brown (10YR 8/2) coatings on bottom of rock fragments; 40 percent gravel and 10 percent cobbles; slightly effervescent; NaF pH 9.5; moderately alkaline (pH 8.3).

Thickness of mollic epipedon: 20 to 35 inches

Thickness of volcanic ash influence: 7 to 17 inches

Depth to carbonates: 44 to 60 inches

Particle-size control section: 15 to 25 percent clay and 35 to 60 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Content of clay—14 to 27 percent

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Content of clay—14 to 27 percent

Rock fragments—10 to 30 percent gravel and 0 to 5 percent cobbles

BA horizon:

Texture—very gravelly loam or very cobbly loam

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly loam or very cobbly loam in the upper part and very gravelly loam, extremely gravelly loam, very cobbly loam, or extremely cobbly loam in the lower part

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline in the upper part and slightly alkaline or moderately alkaline in the lower part

Bk horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly loam, extremely gravelly loam, or extremely cobbly loam

Content of clay—15 to 18 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Nevo Series

Depth class: Very shallow

Drainage class: Well drained

Position on landscape: Summits of hills and structural benches

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Parent material: Residuum derived from basalt

Slope range: 3 to 60 percent

Elevation: 500 to 2,200 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Xeric Haplargids

Typical pedon of Nevo very cobbly loam in Kittitas County, Washington; 500 feet south and 2,000 feet east of the northwest corner of section 1, T. 14 N., R. 22 E.; Black Rock Spring NE, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 45 minutes 44 seconds north and longitude 120 degrees 0 minutes 44 seconds west; NAD 83.

A—0 to 2 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium and thick platy structure parting to weak medium granular; soft, very friable, nonsticky and nonplastic; many very fine roots; few very fine tubular pores; 20 percent gravel and 25 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt—2 to 8 inches; brown (7.5YR 4/2) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, sticky and plastic; common very fine roots; many very fine tubular pores; common distinct clay films on faces of peds; 25 percent gravel and 15 percent cobbles; neutral (pH 7.0); clear smooth boundary.

R—8 inches; fractured basalt with coatings of silica on 30 percent of total surface area.

Depth to bedrock: 5 to 10 inches

Particle-size control section: 25 to 33 percent clay and 40 to 75 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Texture—very cobbly loam or extremely gravelly sandy loam

Content of clay—10 to 18 percent

Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly loam, very gravelly clay loam, or extremely gravelly loam

Content of clay—25 to 33 percent

Niben Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes and dissected plateaus

Parent material: Residuum and colluvium derived from interbedded sediment

Slope range: 3 to 30 percent

Elevation: 1,800 to 2,900 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Calcic Pachic Argixerolls

Soil Survey of Kittitas County Area, Washington

Typical pedon of Niben loam in Kittitas County, Washington, about 9 miles west of Vantage; about 1,800 feet west and 2,000 feet north of the southeast corner of section 3, T. 16 N., R. 21 E.; Boyleston, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 54 minutes 9 seconds north and longitude 120 degrees 11 minutes 1 second west; NAD 83.

- A—0 to 4 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few coarse roots; many very fine and fine tubular pores; 10 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.
- Bt1—4 to 13 inches; brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; common fine and medium tubular pores; few faint clay films lining pores and on faces of peds; 5 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.
- Bt2—13 to 18 inches; brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; many very fine and fine interstitial and tubular pores; common distinct clay films lining pores and on faces of peds; 10 percent gravel; slightly alkaline (pH 7.6); abrupt wavy boundary.
- 2Bt3—18 to 26 inches; brown (10YR 4/3) clay, very dark grayish brown (10YR 3/2) moist; strong fine and medium prismatic structure; hard, friable, sticky and plastic; common very fine and few fine and coarse roots; many fine and medium interstitial and tubular pores; common distinct clay films lining pores and on faces of peds; 5 percent gravel and 5 percent cobbles; slightly alkaline (pH 7.6); clear wavy boundary.
- 2Btk1—26 to 42 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; strong fine and medium prismatic structure; hard, friable, sticky and plastic; few very fine, medium, and coarse roots; common fine and medium interstitial and tubular pores; many prominent clay films lining pores and on faces of peds; few faint coatings of lime lining pores; 5 percent gravel; slightly effervescent in pores; slightly alkaline (pH 7.8); clear wavy boundary.
- 3Btk2—42 to 51 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; strong fine and medium prismatic structure parting to strong fine angular blocky; very hard, friable, sticky and plastic; few very fine, medium, and coarse roots; few fine and medium interstitial and tubular pores; many prominent clay films lining pores and on faces of peds; many prominent coatings of lime on faces of peds; 5 percent gravel; slightly effervescent; moderately alkaline (pH 7.9); abrupt wavy boundary.
- 4Btk3—51 to 60 inches; brown (7.5YR 4/3) clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine and medium interstitial and tubular pores; few distinct clay films lining pores and on faces of peds; few distinct coatings of lime lining pores and on faces of peds and rock fragments; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.0).

Thickness of mollic epipedon: More than 25 inches

Particle-size control section: Averages 30 to 35 percent clay and 5 to 15 percent rock fragments

A horizon:

Value—3 moist, 3 or 4 dry

Chroma—2 or 3 dry or moist

Content of clay—17 to 24 percent

Bt horizon:

Value—3 moist, 3 or 4 dry
Chroma—2 or 3 dry or moist
Content of clay—29 to 32 percent
Content of rock fragments—2 to 15 percent gravel
Reaction—neutral or slightly alkaline

2Bt horizon:

Value—3 moist, 4 or 5 dry
Chroma—2 or 3 dry or moist
Texture—clay or clay loam
Content of clay—33 to 45 percent
Reaction—neutral or slightly alkaline

2Btk horizon:

Value—3 or 4 dry or moist
Chroma—2 or 3 dry or moist
Texture—clay or clay loam
Content of clay—33 to 45 percent
Calcium carbonate equivalent—0 to 15 percent
Reaction—slightly alkaline or moderately alkaline

3Btk horizon:

Value—3 or 4 dry or moist
Chroma—2 or 3 dry or moist
Texture—clay or clay loam
Content of clay—33 to 45 percent
Calcium carbonate equivalent—0 to 15 percent
Reaction—slightly alkaline or moderately alkaline

4Btk horizon:

Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—clay, clay loam, or gravelly clay loam
Content of clay—33 to 45 percent
Calcium carbonate equivalent—1 to 15 percent
Reaction—slightly alkaline or moderately alkaline

Nimue Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from igneous rock with a mantle of volcanic ash and pumice

Slope range: 5 to 60 percent

Elevation: 2,700 to 5,500 feet

Mean annual precipitation: 70 to 120 inches

Mean annual air temperature: 38 to 41 degrees F

Frost-free period: 65 to 90 days

Taxonomic classification: Loamy-skeletal, isotic Andic Haplocryods

Typical pedon of Nimue ashy sandy loam in the Snoqualmie Pass Area, King County, Washington, Government Meadows area; 2,600 feet north and 700 feet west of the southeast corner of section 33, T. 19 N., R. 6 E.; Wilkeson, Washington,

Soil Survey of Kittitas County Area, Washington

U.S. Geological Survey topographic quadrangle; latitude 47 degrees 5 minutes 48 seconds north and longitude 122 degrees 2 minutes 48 seconds west; NAD 83.

Oa—0 to 2 inches; black (5YR 2.5/1) decomposed forest litter; many very fine roots; abrupt wavy boundary.

E—2 to 4 inches; gray (10YR 5/1) ashy sandy loam (volcanic ash and pumice), light gray (10YR 7/1) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; 5 percent gravel; very strongly acid (pH 5.0); abrupt wavy boundary.

Bhs—4 to 7 inches; variegated, dark reddish brown (5YR 3/2 and 3/4) and yellowish red (5YR 5/6) ashy sandy loam (volcanic ash and pumice), strong brown (7.5YR 4/6) dry; moderate medium subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many fine and medium and common coarse roots; 10 percent gravel; very strongly acid (pH 5.0); abrupt irregular boundary.

Bs—7 to 12 inches; reddish brown (5YR 4/4) and strong brown (7.5YR 5/6) ashy sandy loam (65 percent sand-sized volcanic ash), light brown (7.5YR 6/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium roots; 12 percent gravel; strongly acid (pH 5.2); clear irregular boundary.

2BC—12 to 26 inches; brown (7.5YR 4/4) very gravelly loam, light yellowish brown (10YR 6/4) dry; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; common fine and medium and few coarse roots; 40 percent angular gravel and 5 percent angular cobbles; strongly acid (pH 5.4); gradual irregular boundary.

2C1—26 to 45 inches; dark yellowish brown (10YR 4/6) extremely gravelly silt loam, pale yellow (2.5Y 7/4) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; 60 percent angular gravel and 10 percent angular cobbles; moderately acid (pH 5.8); diffuse smooth boundary.

2C2—45 to 62 inches; olive brown (2.5Y 4/4) extremely gravelly silt loam, light brownish gray (2.5Y 6/2) dry; weak fine subangular blocky structure; slightly hard, firm, sticky and plastic; nonsmeary; 65 percent angular gravel and 10 percent angular cobbles; moderately acid (pH 5.8).

Thickness of volcanic ash influence: 7 to 14 inches

Particle-size control section: 5 to 15 percent clay and 40 to 70 percent rock fragments

E horizon:

Hue—10YR or 7.5YR

Value—3 to 7 moist, 6 to 8 dry

Chroma—0 to 2 dry or moist

Content of clay—5 to 8 percent

Bhs horizon:

Hue—5YR or 7.5YR

Value—3 to 5 moist

Chroma—2 to 6 moist or dry

Texture—ashy sandy loam or gravelly ashy sandy loam

Content of clay—5 to 8 percent

Reaction—very strongly acid or moderately acid

Bs horizon:

Texture—ashy sandy loam or gravelly ashy sandy loam

Content of clay—5 to 10 percent

Reaction—strongly acid or moderately acid

Soil Survey of Kittitas County Area, Washington

2BC horizon:

Hue—10YR or 7.5YR

Value—3 to 5 moist

Chroma—4 to 6 dry or moist

Texture—very gravelly loam, very gravelly sandy loam, or extremely gravelly sandy loam

Content of clay—5 to 15 percent

Reaction—slightly acid to strongly acid

2C horizon:

Hue—10YR or 2.5Y

Value—3 to 5 moist

Chroma—2 to 6 moist or dry

Texture—extremely gravelly silt loam, very gravelly sandy loam, or extremely gravelly loam

Content of clay—5 to 15 percent

Reaction—slightly acid or moderately acid

Nint Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Canyons, hillslopes, and dissected plateaus

Parent material: Colluvium and some residuum derived from basalt with an influence of volcanic ash and loess in the upper part

Slope range: 0 to 75 percent

Elevation: 1,800 to 4,300 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 110 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Nint gravelly ashy loam, stony, in Kittitas County, Washington, about 7 miles south of Ellensburg; about 1,980 feet north and 380 feet east of the southwest corner of section 15, T. 16 N., R. 18 E.; The Cottonwoods, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 52 minutes 29 seconds north and longitude 120 degrees 34 minutes 13 seconds west; NAD 83.

A—0 to 9 inches; dark grayish brown (10YR 4/2) gravelly ashy loam, black (10YR 2/1) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 25 percent gravel and 5 percent cobbles; neutral (pH 6.8); clear wavy boundary.

BAt—9 to 13 inches; brown (10YR 4/3) very gravelly clay loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure and moderate fine and medium granular; soft, very friable, slightly sticky and moderately plastic; many very fine roots; many very fine irregular pores; common faint pressure faces on peds and few faint clay bridges in pores; 30 percent gravel and 10 percent cobbles; neutral (pH 7.0); clear wavy boundary.

Bt1—13 to 19 inches; brown (10YR 4/3) very gravelly clay loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common very fine roots; common very fine irregular pores; many distinct pressure faces on peds and common faint

clay bridges in pores; 40 percent gravel and 15 percent cobbles; neutral (pH 7.0); clear wavy boundary.

Bt2—19 to 28 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine roots; common very fine irregular pores; many distinct pressure faces on peds and many faint clay bridges in pores; 45 percent gravel and 15 percent cobbles; neutral (pH 7.0); clear wavy boundary.

Bt3—28 to 38 inches; dark yellowish brown (10YR 4/4) extremely gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; common very fine irregular pores; many distinct pressure faces on peds; few pockets of prominent dark brown (7.5YR 3/3) clay films on faces of peds and common distinct dark brown (7.5YR 3/3) clay films lining pores; 45 percent gravel and 20 percent cobbles; neutral (pH 7.0); abrupt irregular boundary.

2R—38 inches; fractured basalt.

Thickness of mollic epipedon: 20 to 35 inches

Thickness of volcanic ash influence: 7 to 13 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 27 to 35 percent clay and 35 to 70 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—15 to 20 percent

BAt horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—gravelly clay loam or very gravelly clay loam

Content of clay—27 to 33 percent

Bt horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very gravelly clay loam, extremely gravelly clay loam, or extremely cobbly clay loam

Content of clay—27 to 35 percent

Nitcha Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces and alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 10 to 13 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Haploxerolls

Soil Survey of Kittitas County Area, Washington

Typical pedon of Nitcha ashy loam in Kittitas County, Washington, about 3 miles south of Kittitas; about 250 feet east and 950 feet south of the northwest corner of section 26, T. 17 N., R. 19 E.; Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 56 minutes 20 seconds north and longitude 120 degrees 26 minutes 1 second west; NAD 83.

Ap—0 to 5 inches; brown (10YR 4/3) ashy loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular and tubular pores; NaF pH 8.6; slightly alkaline (pH 7.4); clear smooth boundary.

AB—5 to 12 inches; brown (10YR 5/3) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure parting to weak medium granular; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common fine irregular and tubular pores; NaF pH 8.6; slightly alkaline (pH 7.4); gradual wavy boundary.

Bw1—12 to 26 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to fine prismatic; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine irregular and tubular pores; NaF pH 8.8; slightly alkaline (pH 7.6); gradual wavy boundary.

Bw2—26 to 30 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine prismatic; slightly hard, friable, slightly sticky and slightly plastic; NaF pH 8.8; slightly alkaline (pH 7.6); gradual wavy boundary.

Bw3—30 to 42 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; weak fine prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine vesicular and irregular pores; NaF pH 8.8; slightly alkaline (pH 7.6); gradual wavy boundary.

2BC—42 to 60 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; NaF pH 8.0; slightly alkaline (pH 7.6).

Thickness of mollic epipedon: More than 40 inches

Thickness of volcanic ash influence: 7 to 14 inches

Particle-size control section: 18 to 27 percent clay and 0 to 5 percent rock fragments

Ap horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—18 to 27 percent

Reaction—slightly acid to slightly alkaline

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—18 to 27 percent

Reaction—slightly acid to slightly alkaline

Bw horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—sandy clay loam or fine sandy loam

Content of clay—18 to 27 percent

Reaction—neutral or slightly alkaline

2BC horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry

Texture—fine sandy loam or sandy loam

Content of clay—14 to 18 percent

Nitzel Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Flood plains

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,400 to 3,100 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, isotic, mesic Vitrandic Haploxerolls

Typical pedon of Nitzel ashy silt loam in Kittitas County, Washington, about 5 miles south of East Kittitas; about 2,550 feet south and 300 feet east of the northwest corner of section 5, T. 16 N., R. 20 E.; East Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 54 minutes 18 seconds north and longitude 120 degrees 21 minutes 36 seconds west; NAD 83.

Ap1—0 to 4 inches; grayish brown (10YR 5/2) ashy silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; hard, friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and fine pores; NaF pH 8.5; neutral (pH 7.2); abrupt smooth boundary.

Ap2—4 to 8 inches; grayish brown (10YR 5/2) ashy silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; hard, friable, slightly sticky and slightly plastic; common very fine and few medium roots; common very fine pores; NaF pH 8.5; neutral (pH 7.2); abrupt smooth boundary.

AB—8 to 16 inches; brown (10YR 5/3) ashy loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and few medium vesicular pores; NaF pH 8.8; neutral (pH 7.2); clear wavy boundary.

Bw1—16 to 29 inches; brown (10YR 5/3) ashy loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine tubular pores; NaF pH 8.8; neutral (pH 7.2); clear wavy boundary.

2Bw2—29 to 46 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to weak fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine tubular pores; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

2Bw3—46 to 60 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; moderate fine prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; common fine distinct dark yellowish brown (10YR 3/6) iron accumulations; NaF pH 8.5; neutral (pH 7.2).

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Thickness of mollic epipedon: More than 40 inches

Thickness of volcanic ash influence: 20 to 30 inches

Irrigation-induced water table: Present during the irrigation season

Particle-size control section: 18 to 30 percent clay and 0 to 5 percent rock fragments

Ap horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—18 to 24 percent

Reaction—neutral or slightly acid

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy clay loam or ashy silt loam

Content of clay—18 to 24 percent

Bw1 and 2Bw2 horizons:

Value—2 or 3 moist

Chroma—2 or 3 dry or moist

Texture of Bw1 horizon—ashy loam or ashy silt loam

Texture of 2Bw2 horizon—clay loam, loam, or silt loam

Content of clay—20 to 30 percent

2Bw3 horizon:

Value—2 or 3 moist

Chroma—3 or 4 dry or moist

Content of clay—14 to 18 percent

Nosal Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Flood plains

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Aquandic Endoaquolls

Typical pedon of Nosal ashy silt loam in Kittitas County, Washington, about 1 mile northwest of Ellensburg; about 1,800 feet south and 400 feet east of the northwest corner of section 34, T. 18 N., R. 18 E.; Ellensburg North, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 0 minutes 33 seconds north and longitude 120 degrees 34 minutes 48 seconds west; NAD 83.

Ap—0 to 8 inches; dark gray (10YR 4/1) ashy silt loam, black (10YR 2/1) moist; weak fine granular structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; neutral (pH 7.2); abrupt smooth boundary.

A—8 to 15 inches; dark gray (10YR 4/1) ashy loam, black (10YR 2/1) moist; weak medium prismatic structure parting to weak fine granular; hard, friable, slightly

Soil Survey of Kittitas County Area, Washington

- sticky and slightly plastic; many very fine and common fine and medium roots; common very fine tubular pores; slightly alkaline (pH 7.4); clear wavy boundary.
- AB—15 to 19 inches; dark gray (10YR 4/1) clay loam, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, firm, moderately sticky and moderately plastic; few very fine, fine, and medium roots; few very fine tubular pores; slightly alkaline (pH 7.6); clear wavy boundary.
- Bg1—19 to 26 inches; gray (10YR 5/1) clay loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; very hard, firm, moderately sticky and moderately plastic; few very fine roots; common fine tubular pores; few fine prominent dark yellowish brown (10YR 3/6) iron accumulations throughout; slightly alkaline (pH 7.4); clear wavy boundary.
- Bg2—26 to 32 inches; grayish brown (10YR 5/2) clay loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure; very hard, firm, moderately sticky and moderately plastic; few very fine roots; few very fine tubular pores; common fine prominent dark yellowish brown (10YR 3/6) iron accumulations throughout and few coarse black (10YR 2/1) manganese stains; neutral (pH 7.2); abrupt wavy boundary.
- 2Bg3—32 to 44 inches; grayish brown (10YR 5/2) sandy clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; few coarse tubular pores; many fine prominent dark yellowish brown (10YR 3/6) iron accumulations throughout and few medium black (10YR 2/1) manganese stains; 5 percent gravel; neutral (pH 7.2); abrupt wavy boundary.
- 3Bg4—44 to 60 inches; grayish brown (10YR 5/2) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; few coarse tubular pores; many fine prominent dark yellowish brown (10YR 3/6) iron accumulations and few medium black (10YR 2/1) manganese stains; 40 percent gravel; neutral (pH 7.2).

Thickness of mollic epipedon: 24 to 40 inches

Thickness of volcanic ash influence: 15 to 20 inches

Irrigation-induced water table: Present some time during the irrigation season

Depth to very gravelly or extremely gravelly material: 40 to 60 inches

Particle-size control section: Averages 27 to 35 percent clay and 0 to 5 percent rock fragments

Ap and A horizons:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or ashy silt loam

Content of clay—25 to 27 percent

Reaction—neutral or slightly alkaline

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—clay loam, silty clay loam, or silt loam

Content of clay—25 to 30 percent

Reaction—neutral or slightly alkaline

Bg horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—silty clay loam or clay loam

Content of clay—27 to 35 percent
Reaction—neutral or slightly alkaline

2Bg horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—sandy clay loam, gravelly sandy clay loam, or gravelly clay loam
Content of clay—27 to 35 percent

3Bg horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—very gravelly sandy clay loam or extremely gravelly sandy clay loam
Content of clay—20 to 30 percent

Nosser Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes and dissected plateaus

Parent material: Loess mixed with colluvium and residuum derived from basalt

Slope range: 3 to 30 percent

Elevation: 1,200 to 2,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Xeric Haplargids

Typical pedon of Nosser gravelly loam in Kittitas County, Washington, about 3 miles southwest of Vantage; about 2,300 feet north and 700 feet west of the southeast corner of section 34, T. 17 N., R. 22 E.; Ginkgo, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 55 minutes 4 seconds north and longitude 120 degrees 3 minutes 8 seconds west; NAD 83.

- A—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; few fine and medium tubular pores; 20 percent gravel; neutral (pH 7.2); clear wavy boundary.
- Bt1—3 to 10 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine and medium tubular pores; few faint clay films lining pores and on faces of peds; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.
- Bt2—10 to 18 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; few fine and medium roots; common fine and medium interstitial and tubular pores; few faint clay films lining pores and on faces of peds; 15 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- 2Btkq—18 to 22 inches; brown (10YR 5/3) extremely gravelly clay loam, dark brown (10YR 3/3) moist; strong fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine roots; common fine and medium irregular pores; few faint clay films lining pores and on faces of peds; common fine and medium irregular silica durinodes; few fine irregular soft lime aggregates; 50 percent gravel and 15 percent cobbles; slightly alkaline (pH 7.6); abrupt smooth boundary.

3R—22 inches; fractured basalt with coatings of lime and silica on 30 percent of total surface area.

Depth to bedrock: 20 to 40 inches

Particle-size control section: Averages 28 to 33 percent clay and 20 to 35 percent rock fragments

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—17 to 23 percent

Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Texture—gravelly clay loam or clay loam

Content of clay—28 to 33 percent

2Btkq horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Texture—very cobbly clay loam, extremely gravelly clay loam, or very gravelly clay loam

Content of clay—28 to 38 percent

Calcium carbonate equivalent—2 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Odo Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes and canyons

Parent material: Residuum and colluvium derived from basalt with an influence of loess in the upper part

Slope range: 10 to 40 percent

Elevation: 2,000 to 3,600 feet

Mean annual precipitation: 15 to 19 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 145 to 180 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Typic Haploxerolls

Typical pedon of Odo loam in Kittitas County, Washington, about 8 miles west of Ellensburg; 2,400 feet south and 450 feet west of the northeast corner of section 29, T. 18 N., R. 17 E.; Thorp, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 1 minute 18 seconds north and longitude 120 degrees 43 minutes 57 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter; abrupt wavy boundary.

A1—1 to 11 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; few very fine tubular pores; 5 percent gravel; neutral (pH 6.6); clear wavy boundary.

A2—11 to 19 inches; dark brown (10YR 3/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; few very fine tubular pores; 5 percent gravel; neutral (pH 6.6); abrupt wavy boundary.

Bw1—19 to 32 inches; dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable,

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slightly sticky and slightly plastic; common fine and medium and many very fine roots; common very fine tubular pores; 10 percent gravel; slightly acid (pH 6.4) clear wavy boundary.

Bw2—32 to 60 inches; dark yellowish brown (10YR 4/4) gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 30 percent gravel; slightly acid (pH 6.4).

Thickness of mollic epipedon: 12 to 20 inches

Particle-size control section: 18 to 25 percent clay and 5 to 30 percent rock fragments

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture of A2 horizon—loam or gravelly loam

Content of clay—15 to 20 percent

Reaction—neutral or slightly acid

Bw horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry

Chroma—3 or 4 dry or moist

Texture—loam or gravelly loam

Content of clay—18 to 25 percent

Opnish Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Opnish ashy loam in Kittitas County, Washington, about 4 miles southeast of Ellensburg; 700 feet east and 400 feet south of the northwest corner of section 10, T. 17 N., R. 19 E.; Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 59 minutes 5 seconds north and longitude 120 degrees 27 minutes 8 seconds west; NAD 83.

Ap—0 to 8 inches; dark gray (10YR 4/1) ashy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; slightly effervescent; NaF pH 9.5; moderately alkaline (pH 7.9); abrupt smooth boundary.

ABtk—8 to 13 inches; dark gray (10YR 4/1) ashy clay loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular and vesicular pores; few faint soft masses of lime throughout; few faint dark yellowish brown (10YR 4/4) clay films in pores and on faces of peds; slightly effervescent; moderately alkaline (pH 7.9); clear wavy boundary.

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Btk1—13 to 19 inches; dark grayish brown (10YR 4/2) clay loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, friable, moderately sticky and moderately plastic; common very fine roots; common fine tubular and vesicular pores; common medium soft masses of lime throughout; few faint clay films lining pores and on faces of peds; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Btk2—19 to 26 inches; dark grayish brown (10YR 4/2) clay loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, friable, moderately sticky and moderately plastic; common very fine roots; common fine tubular and vesicular pores; common distinct soft masses of lime throughout; common distinct clay films lining pores and on faces of peds; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Btk3—26 to 37 inches; dark grayish brown (10YR 4/2) extremely gravelly clay loam, very dark grayish brown (10YR 3/2) moist; few faint mottles throughout; moderate medium subangular blocky structure parting to moderate fine subangular blocky; hard, friable, moderately sticky and moderately plastic; few very fine roots; common fine irregular and tubular pores; common distinct white (10YR 8/1) coatings of carbonate on faces of peds and rock fragments; common distinct clay films lining pores and on faces of peds; 65 percent gravel and 10 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

2Bt1—37 to 47 inches; brown (10YR 4/3) extremely gravelly sandy clay, very dark grayish brown (10YR 3/2) moist; single grain; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; few very fine tubular pores; common fine iron redoximorphic stains on sand and gravel; 60 percent gravel and 15 percent cobbles; slightly alkaline (pH 7.8); abrupt smooth boundary.

2Bt2—47 to 60 inches; brown (10YR 4/3) extremely gravelly sandy clay, very dark grayish brown (10YR 3/2) moist; single grain; slightly hard, friable, sticky and plastic; few very fine roots; few fine tubular and vesicular pores; common fine iron redoximorphic stains on sand and gravel; 50 percent gravel and 30 percent cobbles; slightly alkaline (pH 7.6).

Thickness of mollic epipedon: 40 to 60 inches

Thickness of volcanic ash influence: 7 to 14 inches

Depth to very gravelly or extremely gravelly material: 20 to 40 inches

Particle-size control section: 35 to 45 percent clay and 10 to 20 percent rock fragments

Irrigation-induced water table: Present some time during the season

Ap horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Content of clay—18 to 25 percent

ABtk horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—ashy loam or ashy clay loam

Content of clay—27 to 33 percent

Calcium carbonate equivalent—5 to 10 percent

Reaction—moderately alkaline or strongly alkaline

Btk horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—clay loam or sandy clay
Content of clay—35 to 40 percent
Calcium carbonate equivalent—5 to 15 percent
Reaction—moderately alkaline or strongly alkaline

2Btk horizon:

Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—extremely gravelly clay loam, very gravelly clay loam, or extremely gravelly clay
Content of clay—35 to 40 percent
Calcium carbonate equivalent—5 to 15 percent
Reaction—slightly alkaline or moderately alkaline

Osborn Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 30 to 70 percent

Elevation: 2,900 to 5,600 feet

Mean annual precipitation: 35 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 120 days

Taxonomic classification: Coarse-loamy, isotic, frigid Andic Dystroxerepts

Typical pedon of Osborn ashy sandy loam in Kittitas County, Washington, about 4 miles west of Tamarack Spring; 1,250 feet north and 1,300 feet east of the southwest corner of section 9, T. 18 N., R. 15 E.; Frost Mountain, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 3 minutes 33 seconds north and longitude 120 degrees 58 minutes 36 seconds west; NAD 83.

Oi—0 to 1 inch; decaying forest litter; clear wavy boundary.

A—1 to 9 inches; yellowish brown (10YR 5/4) ashy sandy loam, dark yellowish brown (10YR 3/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and few medium roots; 5 percent sandstone paragravel; NaF pH 10.5; slightly acid (pH 6.4); clear wavy boundary.

2Bw1—9 to 16 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 10 percent sandstone paragravel; NaF pH 10.1; slightly acid (pH 6.4); abrupt smooth boundary.

2Bw2—16 to 24 inches; light yellowish brown (10YR 6/4) paragravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine roots; 20 percent sandstone paragravel and 5 percent indurated gravel; NaF pH 9.4; slightly acid (pH 6.2); clear wavy boundary.

2BC—24 to 33 inches; pale yellow (2.5Y 7/4) paragravelly sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 20 percent sandstone paragravel and 5 percent indurated gravel; moderately acid (pH 5.8); abrupt wavy boundary.

2Cr—33 inches; weathered sandstone.

Thickness of volcanic ash influence: 7 to 10 inches

Depth to paralithic contact: 20 to 40 inches

Particle-size control section: Averages 5 to 15 percent clay, 5 to 20 percent hard rock fragments, and 20 to 60 percent pararock fragments

A horizon:

Value—5 to 7 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Content of clay—5 to 10 percent

Reaction—moderately acid or slightly acid

2Bw horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—gravelly sandy loam, sandy loam, loam, or paragravelly sandy loam

Content of clay—5 to 15 percent

Reaction—neutral to moderately acid

2BC horizon:

Hue—10YR or 7.5YR

Value—6 or 7 dry, 4 or 5 moist

Texture—paragravelly sandy loam or very paragravelly loam

Content of clay—5 to 15 percent

Reaction—neutral to moderately acid

Pachneum Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes, footslopes, and dissected plateaus

Parent material: Loess with an influence of volcanic ash in the upper part

Slope range: 2 to 60 percent

Elevation: 1,500 to 4,800 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Haploxerolls

Typical pedon of Pachneum ashy loam in Kittitas County, Washington, about 5.5 miles south of Thorp; about 2,100 feet south and 120 feet west of the northeast corner of section 3, T. 17 N., R. 17 E.; Manastash Creek, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 59 minutes 38 seconds north and longitude 120 degrees 41 minutes 19 seconds west; NAD 83.

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine irregular and tubular pores; neutral (pH 6.6); abrupt smooth boundary.

Ap2—4 to 8 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate coarse subangular blocky structure and medium platy; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular and tubular pores; neutral (pH 6.6); abrupt smooth boundary.

A—8 to 18 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular and few coarse tubular pores; 15 percent very coarse cylindrical cicada casts; neutral (pH 6.9); clear wavy boundary.

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BA_t—18 to 26 inches; brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; moderately hard, firm, slightly sticky and moderately plastic; few very fine roots; common very fine irregular and tubular and few coarse tubular pores; common distinct pressure faces on peds and few faint clay bridges in pores; 15 percent very coarse cylindrical cicada casts; neutral (pH 6.9); clear wavy boundary.

Bt₁—26 to 33 inches; brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; moderately hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine irregular and tubular and few coarse tubular pores; common distinct pressure faces on peds and common faint clay bridges and films in pores; few prominent dark grayish brown (10YR 4/2) coatings on vertical faces of peds and lining coarse tubular pores; neutral (pH 7.0); clear wavy boundary.

Bt₂—33 to 47 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; moderately hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine irregular and tubular and few coarse tubular pores; many distinct pressure faces on peds and common faint yellowish brown (10YR 5/4) clay bridges and films in pores; few prominent dark grayish brown (10YR 4/2) coatings on vertical faces of peds and lining coarse tubular pores; neutral (pH 7.2); clear wavy boundary.

Bt₃—47 to 60 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine irregular and tubular and few coarse tubular pores; many distinct pressure faces on peds and common faint yellowish brown (10YR 5/4) clay bridges and films in pores; few prominent dark grayish brown (10YR 4/2) coatings on vertical faces of peds and lining coarse tubular pores; neutral (pH 7.2).

Thickness of mollic epipedon: 25 to 35 inches

Thickness of volcanic ash influence: 13 to 19 inches

Particle-size control section: 23 to 35 percent clay and 0 to 5 percent rock fragments

Ap horizon:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Content of clay—18 to 25 percent

Reaction—neutral or slightly acid

A horizon:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Texture—ashy loam or ashy silt loam

Content of clay—18 to 25 percent

BA_t horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Texture—clay loam, loam, or silty clay loam

Content of clay—27 to 35 percent

B_t horizon:

Value—4 or 5 dry

Chroma—2 to 4 dry or moist

Texture—clay loam, loam, or silty clay loam

Content of clay—27 to 35 percent

Palerf Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Residuum and colluvium derived from basalt and loess mixed with volcanic ash in the upper part

Slope range: 15 to 70 percent

Elevation: 800 to 3,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Vitrandic Palexerolls

Typical pedon of Palerf gravelly ashy loam in Kittitas County, Washington; about 1,100 feet west and 1,700 feet south of the northeast corner of section 26, T. 16 N., R. 20 E., Badger Gap, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 50 minutes 52 seconds north and longitude 120 degrees 16 minutes 45 seconds west; NAD 83.

- A—0 to 4 inches; brown (10YR 5/3) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few medium roots; many very fine irregular and tubular pores; 15 percent gravel; neutral (pH 6.8); abrupt smooth boundary.
- AB—4 to 9 inches; brown (10YR 5/3) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium roots; common very fine tubular pores; 15 percent gravel; neutral (pH 6.9); abrupt wavy boundary.
- 2Bt1—9 to 14 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; moderately hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine tubular pores; many continuous faint pressure faces on peds; many continuous faint clay films in root channels; 35 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- 2Bt2—14 to 21 inches; brown (10YR 5/3) very gravelly clay, dark brown (10YR 3/3) moist; strong fine and medium angular blocky structure; very hard, firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; many continuous distinct dark brown (7.5YR 3/2) clay films in root channels; 40 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.6); clear wavy boundary.
- 2Bt3—21 to 27 inches; brown (10YR 5/3) very gravelly clay, dark brown (10YR 3/3) moist; strong fine and medium angular blocky structure; very hard, firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; many continuous faint pressure faces on peds; many continuous distinct dark brown (7.5YR 3/2) clay films in root channels; 40 percent gravel and 15 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary.
- 2Btk—27 to 35 inches; brown (10YR 5/3) extremely gravelly clay, dark brown (10YR 3/3) moist; strong coarse prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; few faint clay skins in root channels; common white (10YR 8/1) prominent continuous coatings of lime throughout and on faces of peds; many continuous faint pressure faces on peds; 45 percent gravel and

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20 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.
3R—35 inches; basalt.

Thickness of mollic epipedon: 23 to 40 inches

Thickness of volcanic ash influence: 7 to 14 inches

Depth to bedrock: 25 to 40 inches

Particle-size control section: Averages 40 to 60 percent clay and 35 to 60 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Content of clay—15 to 25 percent

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Content of clay—15 to 25 percent

Reaction—neutral or slightly alkaline

2Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 2 or 3 moist

Chroma—2 or 3 moist

Texture—very cobbly clay loam, very gravelly clay, or very gravelly clay loam

Content of clay—35 to 45 percent

Reaction—neutral to moderately alkaline

2Btk horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly clay, extremely cobbly clay loam, or extremely gravelly clay

Content of clay—35 to 60 percent

Calcium carbonate equivalent—15 to 25 percent

Reaction—slightly alkaline or moderately alkaline

Patnish Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Flood plains

Parent material: Alluvium mixed with volcanic ash in the upper part

Slope range: 0 to 3 percent

Elevation: 1,800 to 4,800 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Vitrandic Haploxerolls

Typical pedon of Patnish ashy loam in Kittitas County, Washington, about 5 miles east of Cle Elum; about 1,400 feet east and 2,500 feet south of the northwest corner of section 25, T. 20 N., R. 16 E.; Teanaway, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 11 minutes 48 seconds north and longitude 120 degrees 47 minutes 12 seconds west; NAD 83.

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- Ap—0 to 7 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine, and few coarse roots; many very fine irregular pores; 5 percent gravel; NaF pH 8.5; slightly acid (pH 6.4); abrupt smooth boundary.
- A1—7 to 14 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine, and few coarse roots; many very fine irregular pores; 5 percent gravel; NaF pH 8.5; slightly acid (pH 6.4); clear wavy boundary.
- A2—14 to 23 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; 5 percent gravel; NaF pH 7.8; slightly acid (pH 6.4); clear wavy boundary.
- AB—23 to 27 inches; brown (10YR 4/3) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine irregular pores; 5 percent gravel; NaF pH 7.8; slightly acid (pH 6.4); abrupt smooth boundary.
- Bw—27 to 35 inches; brown (10YR 4/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine irregular pores; 35 percent gravel and 5 percent cobbles; NaF pH 7.8; slightly acid (pH 6.5); abrupt wavy boundary.
- 2C—35 to 60 inches; grayish brown (10YR 5/2) extremely cobbly loamy sand, very dark gray (10YR 3/1) moist; single grain; loose; few very fine roots; 35 percent gravel and 45 percent cobbles; NaF pH 7.8; neutral (pH 6.6).

Thickness of mollic epipedon: 20 to 40 inches

Thickness of volcanic ash influence: 8 to 15 inches

Water table: Present some time during the year

Particle-size control section: Averages 18 to 25 percent clay and 5 to 35 percent rock fragments in the upper part and is 8 to 14 percent clay and more than 65 percent rock fragments in the lower part

Reaction: Slightly acid throughout

Ap and A1 horizons:

Value—3 or 4 dry,

Chroma—1 or 2 dry or moist

Content of clay—15 to 25 percent

A2 and AB horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—loam, sandy loam, or sandy clay loam

Content of clay—18 to 27 percent

Bw horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly sandy loam, gravelly sandy loam, or gravelly sandy clay loam

Content of clay—14 to 22 percent

2C horizon:

Value—4 to 6 dry, 2 to 4 moist

Chroma—1 to 4 dry or moist

Texture—extremely gravelly sand, extremely cobbly sand, or extremely cobbly loamy sand

Content of clay—8 to 14 percent

Patron Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Residuum and colluvium derived from basalt and loess with an influence of volcanic ash in the upper part

Slope range: 5 to 70 percent

Elevation: 1,000 to 3,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Fine, smectitic, mesic Vitrandic Palexerolls

Typical pedon of Patron gravelly ashy silt loam in Kittitas County, Washington; about 300 feet east and 2,400 feet north of the southeast corner of section 28, T. 16 N., R. 21 E.; McDonald Spring, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 50 minutes 41 seconds north and longitude 120 degrees 11 minutes 33 seconds west; NAD 83.

A—0 to 3 inches; brown (10YR 4/3) gravelly ashy silt loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine irregular pores; 15 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

AB—3 to 12 inches; dark grayish brown (10YR 4/2) gravelly ashy silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine irregular pores; 15 percent gravel and 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

2Bt1—12 to 23 inches; brown (10YR 4/3) gravelly silty clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common fine and few coarse roots; many very fine irregular pores; common distinct clay films on faces of peds and pressure faces on peds; 20 percent gravel and 5 percent cobbles; neutral (pH 7.0); clear wavy boundary.

2Bt2—23 to 35 inches; yellowish brown (10YR 5/4) gravelly silty clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few medium roots; many very fine and fine tubular pores; common distinct clay films on faces of peds and pressure faces on peds; 20 percent gravel; neutral (pH 7.0); clear wavy boundary.

2Bt3—35 to 60 inches; yellowish brown (10YR 5/4) very gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds and pressure faces on peds; 35 percent gravel and 5 percent cobbles; neutral (pH 7.2).

Thickness of mollic epipedon: 20 to 30 inches

Thickness of volcanic ash influence: 7 to 14 inches

Particle-size control section: 35 to 40 percent clay and 15 to 35 percent rock fragments

A and AB horizons:

Value—3 or 4 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—gravelly ashy silt loam or cobbly ashy silt loam

Content of clay—15 to 25 percent

2Bt horizon:

Value—5 or 6 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—gravelly silty clay loam or gravelly clay loam in the upper part and very gravelly clay loam, very cobbly clay, or extremely gravelly clay in the lower part

Content of clay—35 to 50 percent

Reaction—neutral or slightly alkaline

Polallie Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Summits, shoulders, and backslopes of mountains

Parent material: Colluvium derived from sandstone with a mantle of volcanic ash

Slope range: 10 to 65 percent

Elevation: 3,500 to 6,000 feet

Mean annual precipitation: 60 to 90 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 40 to 85 days

Taxonomic classification: Ashy-skeletal, amorphic Andic Haplocryods

Typical pedon of Polallie gravelly ashy sandy loam in Kittitas County, Washington, about 1.5 miles southwest of Waptus Lake; 800 feet north and 500 feet east of the southwest corner of section 14, T. 23 N. R. 13 E.; Polallie Ridge, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 28 minutes 42 seconds north and longitude 121 degrees 11 minutes 18 seconds west; NAD 83.

Oi—0 to 1 inch; duff and partially decomposed litter; abrupt smooth boundary.

E—1 to 2 inches; dark brown (10YR 3/3) gravelly ashy sandy loam, brown (10YR 5/3) dry; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine roots; many very fine tubular pores; 15 percent gravel; strongly acid (pH 5.2); abrupt smooth boundary.

Bhs—2 to 3 inches; dark brown (7.5YR 3/4) gravelly ashy sandy loam, strong brown (7.5YR 4/6) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and few medium roots; many very fine tubular pores; 20 percent gravel; NaF pH 10.1; strongly acid (pH 5.2); abrupt smooth boundary.

Bw1—3 to 14 inches; strong brown (7.5YR 4/6) very gravelly ashy sandy loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; 40 percent gravel; NaF pH 12.0; strongly acid (pH 5.4); clear wavy boundary.

Bw2—14 to 26 inches; strong brown (7.5YR 4/6) very gravelly ashy loam, yellowish brown (10YR 5/6) dry; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; weakly smeary; common few medium roots; common fine tubular pores; 30 percent gravel and 10 percent cobbles; NaF pH 11.5; moderately acid (pH 5.8); clear wavy boundary.

C—26 to 38 inches; dark yellowish brown (10YR 4/6) extremely gravelly ashy sandy loam, light yellowish brown (10YR 6/4) dry; massive; soft, very friable, nonsticky

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and nonplastic; few fine roots; few fine tubular pores; 55 percent gravel and 15 percent cobbles; NaF pH 10.0; moderately acid (pH 5.6); clear wavy boundary. R—38 inches; fractured sandstone.

Thickness of volcanic ash influence: Entire soil profile

Depth to bedrock: 20 to 40 inches

Particle-size control section: Averages 5 to 15 percent clay and 35 to 60 percent rock fragments

Reaction: Moderately acid or strongly acid throughout

E horizon:

Value—4 to 6 dry, 2 to 4 moist

Chroma—2 to 4 dry, 1 to 3 moist

Content of clay—5 to 8 percent

Bhs horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 moist, 3 to 6 dry

Content of clay—5 to 10 percent

Bw1 horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry

Chroma—3 or 4 moist, 3 to 6 dry

Texture—very gravelly ashy sandy loam or gravelly ashy sandy loam

Content of clay—5 to 10 percent

Bw2 horizon:

Hue—10YR or 7.5YR

Value—3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—very gravelly ashy loam, very gravelly ashy sandy loam, or very cobbly ashy sandy loam

Content of clay—5 to 15 percent

C horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—4 or 6 moist

Texture—extremely gravelly ashy sandy loam, very gravelly ashy sandy loam, or very cobbly ashy sandy loam

Content of clay—5 to 10 percent

Qualla Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Moraines

Parent material: Glacial till with loess in the upper part

Slope range: 0 to 30 percent

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 140 day

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Argixerolls

Typical pedon of Qualla loam in Kittitas County, Washington, about 10 miles east of Cle Elum; about 270 feet west and 250 feet south of the northeast corner of section

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29, T. 20 N, R. 17 E.; Swauk Prairie, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 12 minutes 13 seconds north and longitude 120 degrees 43 minutes 53 seconds west; NAD 83.

- Ap—0 to 7 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular pores; moderately acid (pH 5.9); abrupt smooth boundary.
- AB—7 to 15 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common very fine and few fine tubular pores; common faint pressure faces on peds; slightly acid (pH 6.2); clear wavy boundary.
- Bw—15 to 28 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common very fine and few fine tubular pores; common faint pressure faces on peds; 10 percent very coarse cylindrical cicada casts; neutral (pH 6.8); clear wavy boundary.
- B/E—28 to 34 inches; about 60 percent (B part) yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common very fine and fine tubular pores; common faint pressure faces and common faint clay bridges in pores; 10 percent very coarse cylindrical cicada casts; about 40 percent (E part) light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine irregular, few fine and medium vesicular, and common fine tubular pores; neutral (pH 7.0); clear wavy boundary.
- E—34 to 38 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular, common fine and few medium vesicular, and common fine tubular pores; neutral (pH 6.9); abrupt irregular boundary.
- 2Btb1—38 to 42 inches; pale brown (10YR 6/3) clay loam, dark yellowish brown (10YR 3/4) moist; moderate very coarse prismatic structure parting to fine and medium subangular blocky; very hard, firm, moderately sticky and moderately plastic; few very fine roots between peds; many very fine irregular and fine tubular pores and very few very fine irregular and tubular pores in very coarse prisms; many prominent dark brown (7.5YR 3/3) clay films on vertical faces of very coarse prisms and in tubular pores; common prominent light gray (10YR 7/2) patches of skeletalans on vertical faces of very coarse prisms; few very fine iron-manganese concretions; neutral (pH 6.7); gradual wavy boundary.
- 2Btb2—42 to 60 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate very coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, firm, moderately sticky and moderately plastic; very few very fine roots between peds; common very fine tubular pores; many prominent clay films on faces of peds and in tubular pores; few distinct iron-manganese stains on faces of peds and very few very fine iron-manganese concretions; neutral (pH 7.2).

Thickness of mollic epipedon: 19 to 30 inches

Depth to the 2Btb horizon: 30 to 40 inches

Perched water table: Present some time during the year

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Particle-size control section: 28 to 35 percent clay and 0 to 15 percent rock fragments

Ap horizon and A horizon (where present):

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—14 to 18 percent

Reaction—neutral to moderately acid

AB horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Texture—loam or silt loam

Content of clay—16 to 25 percent

Reaction—slightly acid or neutral

Bw horizon and B part of B/E horizon:

Value—4 or 5 dry

Chroma—3 or 4 dry or moist

Texture—loam or silt loam

Content of clay—17 to 25 percent

Reaction—slightly acid or neutral

E part of B/E horizon and E horizon:

Value—6 or 7 dry, 4 or 5 moist

Texture—loam or silt loam

Content of clay—17 to 25 percent

Reaction—slightly acid or neutral

2Btb horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—clay loam in the upper part and gravelly clay loam or clay loam in the lower part

Content of clay—27 to 40 percent

Quicksell Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Terraces

Parent material: Alluvium

Slope range: 0 to 5 percent

Elevation: 1,800 to 3,100 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Taxonomic classification: Fine, mixed, superactive, mesic Xeric Argialbolls

Typical pedon of Quicksell loam in Kittitas County, Washington, about 2 miles southeast of Cle Elum; 1,800 feet west and 800 feet south of the northeast corner of section 6, T. 19 N., R. 16 E.; Cle Elum, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 10 minutes 22 seconds north and longitude 120 degrees 53 minutes 7 seconds west; NAD 83.

A1—0 to 5 inches; gray (10YR 5/1) loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very

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- fine and few coarse roots; many fine irregular pores; 5 percent gravel; neutral (pH 6.6); abrupt smooth boundary.
- A2—5 to 15 inches; gray (10YR 5/1) clay loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common medium and coarse roots; common very fine tubular pores; 5 percent gravel; slightly acid (pH 6.4); clear smooth boundary.
- E—15 to 20 inches; light gray (10YR 7/1) clay loam, dark gray (10YR 4/1) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; few medium roots; common very fine tubular pores; 5 percent gravel; slightly acid (pH 6.4); abrupt smooth boundary.
- Bt1—20 to 25 inches; light brownish gray (2.5Y 6/2) clay, grayish brown (2.5Y 5/2) moist; strong medium subangular blocky structure; hard, firm, moderately sticky and very plastic; few fine roots; few medium and common very fine tubular pores; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; 5 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.
- Bt2—25 to 36 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; strong coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few fine roots; few medium and common fine tubular pores; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; 10 percent gravel; neutral (pH 6.6); abrupt smooth boundary.
- Bt3—36 to 43 inches; light gray (2.5Y 7/2) clay, light yellowish brown (2.5Y 6/4) moist; strong very coarse subangular blocky structure; hard, firm, slightly sticky and moderately plastic; few very fine roots; few very fine tubular pores; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; 5 percent gravel; slightly acid (pH 6.4); clear smooth boundary.
- C—43 to 60 inches; light gray (2.5Y 7/2) clay loam, light yellowish brown (2.5Y 6/4) moist; common fine prominent strong brown (7.5YR 5/8) redoximorphic concentrations, yellowish red (5YR 4/6) moist; massive; hard, firm, slightly sticky and moderately plastic; few very fine tubular pores; 5 percent gravel; neutral (pH 6.6).

Thickness of mollic epipedon: 10 to 16 inches

Perched water table: Present some time during the year

Depth to Bt horizon: 14 to 26 inches

Particle-size control section: 45 to 55 percent clay and 0 to 10 percent rock fragments

A horizon:

Value—2 or 3 moist

Chroma—1 to 3 dry, 1 or 2 moist

Content of clay—20 to 27 percent

Reaction—moderately acid to neutral

E horizon:

Value—6 or 7 dry

Chroma—1 or 2 dry or moist

Texture—loam or clay loam

Content of clay—20 to 30 percent

Bt horizon:

Hue—10YR or 2.5YR

Value—5 to 7 dry, 4 to 6 moist

Chroma—2 to 4 moist

Content of clay—45 to 55 percent

Reaction—slightly acid or neutral

C horizon:

Hue—10YR or 2.5YR

Value—5 to 7 dry, 3 to 6 moist

Chroma—2 to 4 moist

Texture—clay loam, clay, or gravelly clay loam

Content of clay—35 to 55 percent

Racker Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Outwash terraces

Parent material: Glacial outwash with a mantle of volcanic ash

Slope range: 0 to 5 percent

Elevation: 1,800 to 2,500 feet

Mean annual precipitation: 30 to 45 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 85 to 120 days

Taxonomic classification: Sandy-skeletal, isotic, mesic Andic Dystroxerepts

Typical pedon of Racker ashy loam in Kittitas County, Washington, about 3.5 miles west of Cle Elum; 650 feet north and 350 feet west of the southeast corner of section 30, T. 20 N., R. 15 E.; Ronald, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 11 minutes 30 seconds north and longitude 121 degrees 0 minutes 27 seconds west; NAD 83.

Oe and Oa—0 to 1 inch; moderately decomposed and highly decomposed forest litter.

A—1 to 5 inches; grayish brown (10YR 5/2) ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; 10 percent gravel; NaF pH 9.8; slightly acid (pH 6.2); abrupt smooth boundary.

AB—5 to 12 inches; light yellowish brown (10YR 6/4) gravelly ashy sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine roots; common very fine irregular pores; 20 percent gravel and 5 percent cobbles; NaF pH 10.5; slightly acid (pH 6.2); abrupt smooth boundary

2Bw—12 to 31 inches; light yellowish brown (10YR 6/4) very cobbly loamy sand, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable; few fine and medium roots; few very fine tubular pores; 15 percent gravel and 25 percent cobbles; NaF pH 9.6; slightly acid (pH 6.2); abrupt smooth boundary.

2C—31 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loamy sand, brown (10YR 4/3) moist; single grain; loose; few fine and medium roots; common fine irregular pores; 15 percent gravel and 25 percent cobbles; slightly acid (pH 6.4).

Thickness of volcanic ash influence: 10 to 13 inches

Depth to sandy material: 9 to 15 inches

Particle-size control section: Averages 0 to 5 percent clay and 35 to 65 percent rock fragments

Reaction: Slightly acid throughout

A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 10 percent

AB horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Content of clay—5 to 10 percent

2Bw horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loamy sand or very cobbly loamy sand
Content of clay—0 to 5 percent

2C horizon:

Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly loamy sand or extremely cobbly sand
Content of clay—0 to 5 percent

Ralock Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Alluvium and colluvium derived from basalt with loess and volcanic ash in the upper part

Slope range: 15 to 70 percent

Elevation: 1,000 to 3,000 feet

Mean annual precipitation: 9 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Ralock ashy silt loam in Kittitas County, Washington, about 9 miles southeast of Kittitas; about 1,100 feet west and 1,500 feet south of the northeast corner of section 26, T. 16 N., R. 20 E.; Badger Gap, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 50 minutes 54 seconds north and longitude 120 degrees 16 minutes 45 seconds west; NAD 83.

A—0 to 4 inches; brown (10YR 5/3) ashy silt loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine irregular and tubular pores; 5 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

AB—4 to 14 inches; brown (10YR 5/3) ashy silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine tubular pores; 5 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

2Bt1—14 to 22 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine tubular pores; common distinct clay films in root channels; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

2Bt2—22 to 27 inches; yellowish brown (10YR 5/4) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common distinct clay films lining pores and in root channels; 10 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

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- 2Btk1—27 to 36 inches; yellowish brown (10YR 5/4) gravelly loam, brown to dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; common distinct clay films lining root channels and pores; few fine discontinuous coatings of carbonate lining root channels and pores; 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.
- 2Btk2—36 to 49 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure parting to weak medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; common distinct clay films in root channels and pores; common very fine discontinuous coatings of carbonate in root channels and pores; many fine rounded soft masses of lime; 20 percent gravel; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
- 2Btk3—49 to 60 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure parting to moderate fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine tubular pores; many discontinuous light gray (10YR 7/2) coatings of lime throughout; few faint clay films lining root channels and pores and on faces of pedis; 30 percent gravel; slightly effervescent; moderately alkaline (pH 8.2).

Thickness of mollic epipedon: 20 to 25 inches

Thickness of volcanic ash influence: 7 to 14 inches

Particle-size control section: 20 to 35 percent clay and 15 to 30 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Content of clay—9 to 17 percent

Reaction—neutral or slightly alkaline

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 moist

Texture—ashy silt loam or gravelly ashy silt loam

Content of clay—9 to 17 percent

Reaction—neutral or slightly alkaline

2Bt horizon:

Value—4 to 6 dry, 2 to 5 moist

Chroma—2 to 4 dry or moist

Texture—silt loam, gravelly silt loam, or gravelly clay loam

Content of clay—20 to 35 percent

Reaction—neutral or slightly alkaline

2Btk horizon:

Value—5 to 8 dry, 4 to 6 moist

Chroma—2 to 4 dry or moist

Texture—gravelly loam, gravelly clay loam, or gravelly silt loam in the upper part and gravelly loam, very gravelly clay loam, or very gravelly silt loam in the lower part

Content of clay—25 to 40 percent

Calcium carbonate equivalent—5 to 35 percent

Reaction—slightly alkaline or moderately alkaline

Reelow Series

Depth class: Shallow to a duripan

Drainage class: Well drained

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Position on landscape: Fan remnants, terraces, and till plains

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 2 to 15 percent

Elevation: 1,600 to 3,400 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Clayey, smectitic, mesic, shallow Haplic Durixerolls

Typical pedon of Reelow very cobbly ashy loam in Kittitas County, Washington, about 5 miles northeast of Ellensburg; about 900 feet east and 700 feet north of the southwest corner of section 23, T. 19 N., R. 18 E.; Ellensburg, North, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 7 minutes 8 seconds north and longitude 120 degrees 33 minutes 21 seconds west; NAD 83.

A—0 to 2 inches; brown (10YR 4/3) very cobbly ashy loam, very dark brown (10YR 2/2) moist; weak medium platy structure parting to weak medium granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few coarse roots; common very fine irregular and tubular pores; 30 percent gravel and 20 percent cobbles; NaF pH 8.5; neutral (pH 7.0); clear smooth boundary.

BA—2 to 6 inches; brown (10YR 4/3) ashy clay loam, very dark brown (10YR 2/2) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few coarse roots; common very fine irregular and tubular pores; 10 percent gravel; NaF pH 8.5; neutral (pH 7.0); abrupt wavy boundary.

2Bt—6 to 14 inches; brown (7.5YR 5/3) gravelly clay, dark brown (7.5YR 3/3) moist; strong fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few medium and coarse roots; common very fine tubular pores; many distinct dark brown (7.5YR 3/3) clay films lining pores and on faces of peds; few pockets with prominent dark brown (7.5YR 3/2) clay films on surface of peds at lower boundary; 20 percent gravel and 5 percent cobbles; NaF pH 8.5; neutral (pH 7.0); abrupt wavy boundary.

3Bstqm—14 to 18 inches; strong brown (7.5YR 5/6) dense alluvium that breaks to very gravelly sandy clay loam, brown (7.5YR 4/4) moist; massive; moderately cemented; few very fine roots in vertical seams and common very fine roots concentrated at upper boundary; few very fine pores in seams and around rock fragments and common very fine pores in matrix; common prominent brown (7.5YR 4/4) clay films in vertical seams; 1- to 2-millimeter prominent brown (7.5YR 4/3) concentrations at upper boundary; many prominent strong brown (7.5YR 4/6) coatings around rock fragments; common coatings of silica on bottom of rock fragments and in seams; 35 percent gravel and 10 percent cobbles; NaF pH 8.0; neutral (pH 7.0); clear wavy boundary.

3Bsqm—18 to 56 inches; very pale brown (10YR 7/4) dense alluvium that breaks to extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; moderately cemented; few very fine pores in seams and around rock fragments and common very fine and fine pores in matrix; common distinct light brown (7.5YR 6/4) coatings around rock fragments; common coatings of silica on bottom of rock fragments; common prominent black (N 2/0) iron-manganese stains around rock fragments, in seams, and in pores; few distinct reddish yellow (5YR 7/6) coatings of manganese in seams; 50 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0); clear wavy boundary.

3Bs—56 to 60 inches; light yellowish brown (2.5Y 6/3) extremely gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; weakly cemented; common very fine, fine, and medium pores; few prominent black (N 2.0) iron-manganese stains

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around rock fragments; 50 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0).

Thickness of mollic epipedon: 10 to 20 inches

Thickness of volcanic ash influence: 2 to 7 inches

Depth to a duripan: 10 to 20 inches

Particle-size control section: 35 to 50 percent clay and 15 to 35 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy clay loam, gravelly ashy loam, or very cobbly ashy loam

Content of clay—20 to 25 percent

Reaction—slightly acid or neutral

BA horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy clay loam, gravelly ashy clay loam, or ashy loam

Content of clay—25 to 37 percent

Reaction—slightly acid or neutral

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 to 4 dry or moist

Texture—gravelly clay

Content of clay—40 to 50 percent

Reaction—slightly acid or neutral

3Bstqm horizon:

Cementation—moderately cemented

3Bs horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 6 dry, 2 to 4 moist

Texture—weakly cemented material that breaks to very gravelly sandy loam or extremely gravelly sandy loam

Content of clay—5 to 15 percent

Reaction—slightly acid or neutral

Reeser Series

Depth class: Moderately deep to a duripan

Drainage class: Well drained

Position on landscape: Fan remnants, terraces, and till plains

Parent material: Alluvium and glacial drift with an influence of loess and volcanic ash

Slope range: 2 to 15 percent

Elevation: 1,600 to 3,400 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine, smectitic, mesic Vitrandic Durixerolls

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Typical pedon of Reeser ashy clay loam in Kittitas County, Washington, about 6 miles northwest of Ellensburg; about 1,000 feet south and 250 feet east of the northwest corner of section 31, T. 19 N., R. 18 E.; Thorp, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 6 minutes 0 seconds north and longitude 120 degrees 38 minutes 34 seconds west; NAD 83.

- Ap—0 to 6 inches; grayish brown (10YR 5/2) ashy clay loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine irregular and tubular pores; NaF pH 8.5; neutral (pH 6.8); clear smooth boundary.
- BA—6 to 13 inches; brown (10YR 5/3) ashy clay loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine irregular and few very fine tubular pores; 5 percent gravel; NaF pH 8.6; neutral (pH 7.0); abrupt wavy boundary.
- 2Bt1—13 to 16 inches; brown (10YR 5/3) clay, dark brown (7.5YR 3/3) moist; strong medium angular blocky structure; very hard, very firm, very sticky and very plastic; common very fine roots; common very fine irregular pores; many prominent brown (7.5YR 4/3) clay films lining pores and on faces of peds and few distinct brown (10YR 4/3) pressure faces on vertical faces of peds; 5 percent gravel; NaF pH 8.8; neutral (pH 7.0); clear wavy boundary.
- 2Bt2—16 to 22 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, very firm, very sticky and very plastic; common very fine roots; few very fine tubular pores; many prominent brown (10YR 5/3) clay films lining pores and on faces of peds and few prominent brown (10YR 4/3) pressure faces on vertical faces of peds; 5 percent gravel and 5 percent cobbles; NaF pH 8.2; neutral (pH 7.2); abrupt wavy boundary.
- 3Bstqm—22 to 26 inches; strong brown (7.5YR 5/6) dense alluvium that breaks to extremely gravelly sandy clay loam, brown (7.5YR 4/4) moist; massive; moderately cemented; few very fine roots in vertical seams and many very fine roots concentrated at upper boundary; few very fine pores in seams and around rock fragments and common very fine pores in matrix; common prominent brown (7.5YR 4/3) clay films in vertical seams; 1- to 2-millimeter prominent brown (7.5YR 4/3) concentrations at upper boundary; many prominent strong brown (7.5YR 4/6) coatings around rock fragments; common coatings of silica on bottom of rock fragments; common prominent black (N 2/0) iron-manganese stains around rock fragments and in seams; 55 percent gravel and 10 percent cobbles; NaF pH 8.0; neutral (pH 7.0); clear wavy boundary.
- 3Bsqm—26 to 58 inches; very pale brown (10YR 7/4) dense alluvium that breaks to extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; moderately cemented; few very fine pores in seams and around rock fragments and common very fine and fine pores in matrix; common distinct light brown (7.5YR 6/4) coatings around rock fragments; common coatings of silica on bottom of rock fragments; common prominent black (N 2/0) iron-manganese stains around rock fragments, in seams, and in pores; few distinct reddish yellow (5YR 7/6) coatings of manganese in seams; 55 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0); clear wavy boundary.
- 3Bs—58 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; very weakly cemented; common very fine, fine, and medium pores; few prominent black (N 2/0) iron-manganese stains around rock fragments; 55 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0).

Thickness of mollic epipedon: 15 to 20 inches

Thickness of volcanic ash influence: 10 to 20 inches

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Depth to duripan: 20 to 40 inches

Particle-size control section: 35 to 50 percent clay and 10 to 35 percent rock fragments

Reaction: Slightly acid or neutral throughout

Ap horizon and A horizon (where present):

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry, 1 or 2 moist

Texture—ashy clay loam or ashy loam

Content of clay—22 to 27 percent

BA horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or ashy clay loam

Content of clay—25 to 32 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—clay or gravelly clay

Content of clay—35 to 45 percent

3Bstqm and 3Bsqm horizons:

Cementation—moderately cemented

3Bs horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 6 dry, 2 to 4 moist

Texture—weakly cemented material that breaks to very gravelly sandy loam or extremely gravelly sandy loam

Renslow Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Loess plateaus and hillslopes

Parent material: Loess

Slope range: 5 to 15 percent

Elevation: 1,400 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Calciargidic Argixerolls

Typical pedon of Renslow silt loam in Kittitas County, Washington; about 2,400 feet south and 200 feet east of the northwest corner of section 2, R. 19 E., T. 16 N.; latitude 46 degrees 54 minutes 19 seconds north and longitude 120 degrees 25 minutes 27 seconds west; NAD 83.

A—0 to 11 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular pores; neutral (pH 6.6); clear wavy boundary.

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- BA—11 to 22 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine tubular pores; neutral (pH 7.0); abrupt wavy boundary.
- Bt—22 to 36 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 4/3) moist; moderate coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few patchy clay films lining pores and on faces of peds; common very fine roots; many fine tubular pores; neutral (pH 7.0); abrupt wavy boundary.
- Bk1—36 to 51 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine tubular pores; patchy white (10YR 8/1) coatings of carbonate lining pores and on faces of peds; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.
- Bk2—51 to 57 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; patchy white (10YR 8/1) coatings of carbonate lining pores and on faces of peds; common fine tubular pores; carbonate material in old root channels and matrix; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.
- Bk3—57 to 60 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine roots; many fine tubular pores; patchy white (10YR 8/1) coatings of carbonate lining pores and on faces of peds; slightly effervescent; moderately alkaline (pH 8.0).

Thickness of mollic epipedon: 7 to 10 inches

Particle-size control section: 10 to 18 percent clay

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—10 to 18 percent

BA horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—10 to 18 percent

Reaction—neutral or slightly alkaline

Bt horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Content of clay—10 to 18 percent

Reaction—neutral to moderately alkaline

Bk horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Content of clay—10 to 18 percent

Calcium carbonate equivalent—5 to 15 percent

Reaction—moderately alkaline or strongly alkaline

Rock Creek Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Summits of hills and plateaus

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Parent material: Residuum derived from basalt

Slope range: 0 to 30 percent

Elevation: 2,000 to 3,400 feet

Mean annual precipitation: 10 to 16 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 120 to 170 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Lithic Mollic Haploxeralfs

Typical pedon of Rock Creek very stony silt loam in Yakima County, Washington, 0.75 mile east of Fort Simcoe and 600 feet north of State Highway 3B; in the southwest 1/4 of the southeast 1/4 of section 16, T. 10 N., R. 16 E.; latitude 46 degrees 20 minutes 52 seconds north and longitude 120 degrees 49 minutes 30 seconds west; NAD 83.

A—0 to 2 inches; reddish brown (5YR 5/3) very stony silt loam, dark reddish brown (5YR 3/3) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many fine vesicular pores; 15 percent stones, 5 percent cobbles, and 15 percent gravel; neutral (pH 6.6); abrupt smooth boundary.

Bt1—2 to 7 inches; reddish brown (5YR 5/4) cobbly clay loam, dark reddish brown (5YR 3/4) moist; weak thick platy structure; hard, firm, moderately sticky and moderately plastic; common fine roots; many fine vesicular pores; 15 percent cobbles and 15 percent gravel; few faint clay films; neutral (pH 6.6); gradual wavy boundary.

Bt2—7 to 10 inches; reddish brown (5YR 5/4) extremely cobbly clay loam, dark reddish brown (5YR 3/4) moist; massive; hard, firm, moderately sticky and moderately plastic; few roots forming mats on basalt fragments; 30 percent cobbles, 35 percent gravel, and 5 percent stones; few distinct clay films on basalt fragments and on fracture planes; neutral (pH 6.6); abrupt wavy boundary.

Bt3—10 to 14 inches; brown (7.5YR 4/4) extremely cobbly clay, dark brown (7.5YR 3/4) moist; massive; extremely hard, firm, very sticky and moderately plastic; few roots forming mats on basalt fragments; 40 percent cobbles, 45 percent gravel, and 5 percent stones; common distinct clay films on basalt fragments and along fracture planes; neutral (pH 6.6); gradual wavy boundary.

R—14 inches; fractured basalt.

Depth to bedrock: 8 to 20 inches

Particle-size control section: 35 to 45 percent clay and 35 to 90 percent rock fragments

Reaction: Slightly acid or neutral throughout

A horizon:

Hue—10YR, 5YR, or 7.5YR

Value—4 or 5 dry, 2 to 4 moist

Chroma—2 or 3 dry or moist

Content of clay—20 to 27 percent

Bt horizon:

Hue—5YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—cobbly clay loam, extremely cobbly clay loam, extremely cobbly clay, very cobbly clay, or very gravelly clay

Content of clay—35 to 45 percent

Rollinger Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Loess mixed with volcanic ash in the upper part

Slope range: 2 to 60 percent

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Rollinger ashy silt loam ([fig. 4](#)) in Kittitas County, Washington, about 6 miles south of Kittitas; about 100 feet south and 200 feet east of the northwest corner of section 10, T. 16 N., R. 19 E.; latitude 46 degrees 53 minutes 52 seconds north and longitude 120 degrees 26 minutes 42 seconds west; NAD 83.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) ashy silt loam, very dark brown (10YR 2/2) moist; weak and moderate fine and medium subangular blocky structure parting to fine granular; soft, very friable, slightly sticky and slightly plastic; common fine and medium and few very fine roots; many very fine and fine tubular pores; neutral (pH 7.2); abrupt smooth boundary.

A2—6 to 11 inches; brown (10YR 4/3) ashy silt loam, very dark grayish brown (10YR 3/2) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; common fine and few medium tubular pores; slightly alkaline (pH 7.4); abrupt smooth boundary.

2Bt—11 to 32 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; strong coarse prismatic structure parting to strong fine and medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine and medium interstitial and tubular pores; few faint clay films lining pores and on faces of peds; slightly alkaline (pH 7.4); clear wavy boundary.

2Bw—32 to 41 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular pores; irregular pockets of pale brown (10YR 6/3) material; 10 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

2Bk1—41 to 54 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak fine and medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many fine and medium irregular and few fine tubular pores; moderately effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Bk2—54 to 60 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure; hard, firm, slightly sticky and nonplastic; few fine roots; many fine and medium irregular, common fine and medium vesicular, and few fine tubular pores; moderately effervescent; strongly alkaline.

Thickness of the mollic epipedon: More than 40 inches

Thickness of volcanic ash influence: 7 to 11 inches

Particle-size control section: Averages 25 to 30 percent clay and 0 to 15 percent rock fragments



Figure 4.—Typical profile of Rollinger ashy silt loam. The very deep soil formed in loess mixed with volcanic ash in the upper part. Scale is in feet.

A horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Content of clay—9 to 15 percent
Reaction—neutral or slightly alkaline

2Bt horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—silt loam or silty clay loam
Content of clay—25 to 33 percent
Reaction—neutral or slightly alkaline

2Bw horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Content of clay—18 to 27 percent

2Bk horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam, silty clay loam, sandy loam, gravelly sandy loam, or loam
Content of clay—15 to 30 percent
Calcium carbonate equivalent—5 to 15 percent
Reaction—slightly alkaline to strongly alkaline

Ronsel Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountains slopes, glacial valley walls, and glacial valley floors

Parent material: Glacial till with an influence of volcanic ash

Slope range: 5 to 65 percent

Elevation: 3,000 to 6,000 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 40 to 85 days

Taxonomic classification: Ashy-skeletal, amorphic Andic Haplocryods

Typical pedon of Ronsel ashy sandy loam in Kittitas County, Washington, about 12 miles north of Cle Elum Lake Dam; 1,100 feet north and 400 feet east of the southwest corner of section 11, T. 22 N., R. 14 E.; Davis Peak, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 24 minutes 24 seconds north and longitude 121 degrees 3 minutes 36 seconds west; NAD 83.

Oe—0 to 1 inch; moderately decomposed forest litter.

E—1 to 4 inches; gray (10YR 6/1) ashy sandy loam, dark grayish brown (10YR 4/2) and gray (10YR 6/1) moist; single grain; loose; few fine roots; strongly acid (pH 5.2); abrupt wavy boundary.

Bs—4 to 9 inches; strong brown (7.5YR 5/6) gravelly ashy sandy loam, dark brown (7.5YR 3/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine roots; few very fine tubular pores; 20 percent gravel; NaF pH 10.6; strongly acid (pH 5.2); clear smooth boundary.

BC—9 to 18 inches; light olive brown (2.5Y 5/4) very gravelly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few medium and common fine roots; common very fine tubular pores; 30 percent gravel and 10 percent cobbles; NaF pH 10.1; strongly acid (pH 5.4); clear smooth boundary.

2C—18 to 60 inches; olive yellow (2.5Y 6/6) very gravelly sandy loam, olive brown (2.5Y 4/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; few

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very fine tubular pores; 40 percent gravel and 10 percent cobbles; NaF pH 9.8; medium acid (pH 5.6).

Thickness of volcanic ash influence: 8 to 26 inches

Particle-size control section: Averages 5 to 10 percent clay and 35 to 70 percent rock fragments

E horizon:

Value—5 to 7 dry; 3, 4, or 6 moist

Chroma—1 to 3 dry or moist

Texture—ashy sandy loam, gravelly ashy loam, or stony ashy loam

Content of clay—5 to 8 percent

Reaction—strongly acid or moderately alkaline

Bs horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry

Chroma—4 to 6 dry or moist

Content of clay—5 to 10 percent

Reaction—strongly acid or moderately acid

BC horizon:

Hue—10YR or 2.5YR

Value—3 or 4 moist

Chroma—3 or 4 moist

Texture—very gravelly ashy sandy loam or very cobbly ashy sandy loam

Content of clay—5 to 10 percent

Reaction—strongly acid or moderately acid

2C horizon:

Value—4 to 6 dry or moist

Chroma—4 or 6 dry

Texture—very gravelly sandy loam, extremely cobbly sandy loam, or very cobbly sandy loam

Content of clay—0 to 5 percent

Reaction—slightly acid or moderately acid

Roslyn Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces, valley sides, and kame terraces

Parent material: Glacial drift with a mantle of loess and volcanic ash

Slope range: 5 to 25 percent

Elevation: 1,900 to 2,400 feet

Mean annual precipitation: 30 to 45 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 115 days

Taxonomic classification: Coarse-loamy, isotic, frigid Andic Dystrochrepts

Typical pedon of Roslyn ashy sandy loam in Kittitas County, Washington, about 4 miles west of Cle Elum; 250 feet east and 800 feet south of the northwest corner of section 31, T. 20 N., R. 15 E., Ronald, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 11 minutes 16 seconds north and longitude 121 degrees 1 minute 34 seconds west; NAD 83.

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Oe—0 to 1 inch; partially decomposed forest litter; abrupt smooth boundary.

A1—1 to 8 inches; dark yellowish brown (10YR 4/4) ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine and medium roots; common very fine irregular pores; 5 percent gravel; NaF pH 10.5; slightly acid (pH 6.4); abrupt wavy boundary.

A2—8 to 15 inches; dark brown (7.5YR 4/4) ashy sandy loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine roots; common very fine irregular pores; 5 percent gravel; NaF pH 9.8; slightly acid (pH 6.4); gradual smooth boundary.

2Bw1—15 to 28 inches; strong brown (7.5YR 5/6) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent gravel; NaF pH 9.6; slightly acid (pH 6.2); abrupt smooth boundary.

2Bw2—28 to 37 inches; strong brown (7.5YR 5/6) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine tubular pores; 10 percent gravel; NaF pH 9.6; moderately acid (pH 5.8); abrupt wavy boundary.

2C—37 to 60 inches; yellowish brown (10YR 5/6) gravelly loam, dark yellowish brown (10YR 3/4) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; 15 percent gravel; NaF pH 9.4; moderately acid (pH 5.8).

Thickness of volcanic ash influence: 9 to 14 inches

Particle-size control section: Averages 10 to 22 percent clay and 5 to 35 percent rock fragments

A1 horizon:

Value—4 or 5 dry

Chroma—3 or 4 dry, 2 to 4 moist

Content of clay—5 to 15 percent

A2 horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Content of clay—5 to 15 percent

2Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 or 6 dry

Texture—loam, gravelly loam, or gravelly sandy loam in the upper part and loam, gravelly loam, gravelly sandy loam, or very gravelly sandy loam in the lower part

Content of clay—13 to 20 percent

Reaction—slightly acid or moderately acid

2C horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—gravelly loam, gravelly sandy loam, loam, cobbly loam, very gravelly loamy sand, extremely gravelly sand, extremely gravelly loamy sand, clay loam, or gravelly clay loam

Content of clay—5 to 30 percent

Reaction—slightly acid or moderately acid

Roxer Series

Depth class: Deep and very deep

Drainage class: Well drained

Position on landscape: Toeslopes and footslopes of mountains, glacial valley floors, and glacial valley walls

Parent material: Colluvium derived from basalt and glacial till with a mantle of volcanic ash

Slope range: 5 to 90 percent

Elevation: 2,000 to 6,200 feet

Mean annual precipitation: 40 to 65 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 145 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Andic Dystroxerepts

Typical pedon of Roxer gravelly ashy sandy loam in Kittitas County, Washington, about 9 miles west-northwest of Cle Elum; 100 feet east and 1,550 feet south of the northwest corner of section 15, T. 20 N., R. 14 E.; Ronald, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 13 minutes 47 seconds north and longitude 121 degrees 5 minutes 25 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter; abrupt smooth boundary.

A—1 to 4 inches; brown (10YR 4/3) gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine interstitial pores; 15 percent gravel and 5 percent cobbles; NaF pH 10.5; slightly acid (pH 6.4); abrupt smooth boundary.

BA—4 to 8 inches; brown (7.5YR 4/4) gravelly ashy sandy loam, dark brown (7.5YR 3/4) moist; weak medium and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; common very fine interstitial pores; 15 percent gravel and 5 percent cobbles; NaF pH 10.5; slightly acid (pH 6.2); abrupt smooth boundary.

2Bw1—8 to 33 inches; strong brown (7.5YR 4/6) very gravelly loam, dark brown (7.5YR 3/4) moist; weak medium granular structure and weak fine subangular blocky; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine and very fine roots; many fine interstitial pores; 40 percent gravel and 5 percent cobbles; NaF pH 9.0; moderately acid (pH 6.0); clear smooth boundary.

2Bw2—33 to 44 inches; strong brown (7.5YR 4/6) very cobbly loam, dark brown (7.5YR 3/4) moist; weak medium granular structure and weak fine subangular blocky; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine and coarse roots; many fine interstitial pores; 20 percent gravel and 20 percent cobbles; NaF pH 8.5; moderately acid (pH 5.6); clear smooth boundary.

2BC—44 to 60 inches; strong brown (7.5YR 5/6) very cobbly loam, dark brown (7.5YR 3/4) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine roots; many fine interstitial pores; 25 percent gravel and 20 percent cobbles; NaF pH 8.6; moderately acid (pH 5.6).

Thickness of volcanic ash influence: 7 to 12 inches

Depth to bedrock: 40 to 60 inches or more

Particle-size control section: Averages 5 to 15 percent clay and 35 to 70 percent rock fragments

A horizon:

Value—3 or 4 dry

Chroma—2 or 3 dry or moist

Content of clay—5 to 10 percent

BA horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Content of clay—5 to 15 percent

2Bw1 horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—gravelly loam, very gravelly loam, or gravelly sandy loam

Content of clay—5 to 15 percent

Reaction—moderately acid or slightly acid

2Bw2 horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—very cobbly loam, very gravelly sandy loam, or very gravelly loam

Content of clay—5 to 15 percent

Reaction—moderately acid or slightly acid

2BC horizon:

Value—4 or 5 dry, 3 or 4 moist

Texture—very cobbly loam or very gravelly loam

Content of clay—5 to 15 percent

Reaction—moderately acid or slightly acid

Sagehill Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Terraces and terrace escarpments

Parent material: Lacustrine deposits with a mantle of loess

Slope range: 3 to 60 percent

Elevation: 600 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Xeric Haplocalcids

Typical pedon of Sagehill fine sandy loam in Kittitas County, Washington, about 9 miles northwest of Vantage; about 1,000 feet south and 2,200 feet east of the northwest corner of section 17, T. 18 N., R. 22 E.; Capehorn SE, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 3 minutes 17 seconds north and longitude 120 degrees 6 minutes 1 second west; NAD 83.

A1—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine and fine irregular pores; neutral (pH 7.2); clear wavy boundary.

A2—3 to 6 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and few coarse roots; many very fine and fine irregular pores; neutral (pH 7.2); gradual wavy boundary.

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- Bw1—6 to 12 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few coarse roots; many very fine and fine irregular pores; neutral (pH 7.2); gradual wavy boundary.
- Bw2—12 to 20 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; many very fine and fine irregular pores; 5 percent gravel; neutral (pH 7.2); gradual wavy boundary.
- Bw3—20 to 28 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; many very fine and fine irregular pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.
- 2Bk1—28 to 39 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and very fine roots; many very fine and fine and few coarse irregular pores; violently effervescent; 5 percent gravel; slightly alkaline (pH 7.6); gradual smooth boundary.
- 2Bk2—39 to 45 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; weak coarse and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine and fine irregular pores; violently effervescent; 5 percent gravel; strongly alkaline (pH 8.5); gradual smooth boundary.
- 2Bk3—45 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common fine and very fine irregular pores; strongly effervescent; 5 percent gravel; strongly alkaline (pH 8.5).

Depth to calcic horizon: 15 to 30 inches

Particle-size control section: Averages 5 to 10 percent clay and 0 to 10 percent rock fragments

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 10 percent

Reaction—neutral or slightly alkaline

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—silt loam, fine sandy loam, or very fine sandy loam

Content of clay—5 to 10 percent

Calcium carbonate equivalent—1 to 20 percent

Reaction—neutral or slightly alkaline

Bk horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3 dry or moist

Texture—silt loam, very fine sandy loam, fine sandy loam, or gravelly fine sandy loam

Content of clay—2 to 8 percent

Calcium carbonate equivalent—15 to 35 percent

Reaction—moderately alkaline or strongly alkaline

Sapkin Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 0 to 75 percent

Elevation: 1,900 to 5,400 feet

Mean annual precipitation: 18 to 35 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 130 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, frigid Ultic Argixerolls

Typical pedon of Sapkin very cobbly loam in Kittitas County, Washington, about 23 miles northeast of Ellensburg; 2,700 feet east and 100 feet south of the northwest corner of section 32, T. 20 N., R. 21 E.; Stray Gulch, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 11 minutes 23 seconds north and longitude 120 degrees 13 minutes 42 seconds west; NAD 83.

A1—0 to 5 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; many very fine irregular pores; 15 percent gravel, 30 percent cobbles, and 10 percent stones; slightly acid (pH 6.4); clear smooth boundary.

A2—5 to 16 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; many very fine irregular pores; 15 percent gravel, 35 percent cobbles, and 5 percent stones; slightly acid (pH 6.4); gradual smooth boundary.

AB—16 to 25 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure and weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine tubular pores; 15 percent gravel, 35 percent cobbles, and 5 percent stones; neutral (pH 6.6); gradual smooth boundary.

Bt—25 to 36 inches; yellowish brown (10YR 5/4) very cobbly loam, dark yellowish brown (10YR 3/4) moist; weak coarse subangular blocky structure; slightly hard, firm, slightly sticky and moderately plastic; common fine and very fine roots; common very fine tubular pores; few distinct clay films in pores; 15 percent gravel, 35 percent cobbles, and 5 percent stones; slightly acid (pH 6.4); abrupt irregular boundary.

R—36 inches; fractured basalt.

Thickness of mollic epipedon: 10 to 19 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 18 to 30 percent clay and 40 to 80 percent rock fragments

A1 horizon:

Hue—10YR or 5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—10 to 20 percent

Reaction—slightly acid or neutral

A2 horizon:

Hue—10YR or 5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—very cobbly loam or cobbly loam
Content of clay—10 to 20 percent
Reaction—slightly acid or neutral

AB horizon:

Hue—10YR or 5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—cobbly loam or very cobbly loam
Content of clay—10 to 20 percent
Reaction—slightly acid or neutral

Bt horizon:

Hue—10YR or 5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—very cobbly loam, extremely cobbly clay loam, or very cobbly clay loam
Content of clay—18 to 30 percent

Saydab Series

Depth class: Moderately deep

Drainage class: Moderately well drained

Position on landscape: Summits, shoulders, and backslopes of mountains

Parent material: Colluvium and residuum derived from basalt mixed with volcanic ash and loess

Slope range: 0 to 25 percent

Elevation: 4,600 to 6,800 feet

Mean annual precipitation: 20 to 50 inches

Mean annual air temperature: 39 to 43 degrees F

Frost-free period: 45 to 90 days

Taxonomic classification: Ashy-skeletal, mixed Oxyaquic Vitricryands

Typical pedon of Saydab cobbly ashy loam in Kittitas County, Washington, about 3 miles northwest of Colockum Pass; 1,350 feet west and 1,600 feet north of the southeast corner of section 15, T. 20 N., R. 20 E.; Colockum Pass, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 13 minutes 25 seconds north and longitude 120 degrees 18 minutes 24 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter.

A1—1 to 3 inches; brown (10YR 5/3) cobbly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few very fine roots; common very fine irregular pores; 10 percent gravel and 10 percent cobbles; NaF pH 9.5; moderately acid (pH 5.8); abrupt smooth boundary.

A2—3 to 10 inches; brown (10YR 5/3) gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and few coarse roots; common very fine interstitial pores; 15 percent gravel; NaF pH 9.5; moderately acid (pH 5.6); clear smooth boundary.

Bw1—10 to 17 inches; yellowish brown (10YR 5/4) very gravelly ashy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very

friable, slightly sticky and slightly plastic; weakly smeary; few fine, medium, and coarse roots; many very fine irregular pores; 30 percent gravel and 5 percent cobbles; few fine redoximorphic concentrations that are light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) moist; NaF pH 8.6; strongly acid (pH 5.5); clear smooth boundary.

Bw2—17 to 27 inches; light yellowish brown (10YR 6/4) very cobbly ashy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium and common very fine roots; many very fine irregular pores; 30 percent gravel and 25 percent cobbles; common fine distinct redoximorphic concentrations that are brownish yellow (10YR 6/6) and brown (7.5YR 4/4) moist; NaF pH 8.5; strongly acid (pH 5.4); abrupt smooth boundary.

R—27 inches; basalt.

Thickness of umbric epipedon: 10 to 20 inches

Thickness of volcanic ash influence: Entire soil profile

Depth to bedrock: 20 to 40 inches

Perched water table: Present some time during the year

Particle-size control section: Averages 7 to 15 percent clay and 35 to 60 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture of A2 horizon—gravelly ashy loam or gravelly ashy silt loam

Content of clay—7 to 10 percent

Reaction—moderately acid or slightly acid

Bw horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture of Bw1 horizon—very gravelly ashy loam, gravelly ashy loam, or gravelly ashy silt loam

Texture of Bw2 horizon—very cobbly ashy loam or very cobbly ashy silt loam

Content of clay—7 to 15 percent

Reaction—strongly acid to slightly acid

Scotties Series

Depth class: Deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium and residuum derived from sandstone with a thin mantle of volcanic ash and loess

Slope range: 30 to 75 percent

Elevation: 2,400 to 5,500 feet

Mean annual precipitation: 35 to 40 inches

Mean annual air temperature: 41 to 45 degrees F

Frost-free period: 80 to 120 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Andic Dystroxerepts

Typical pedon of Scotties gravelly ashy loam in Chelan County, Washington, about 3 miles west of Swauk Pass; 300 feet west and 300 feet north of the southeast corner

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of section 36, T. 22 N., R. 17 E.; longitude 120 degrees 38 minutes 30 seconds north and latitude 47 degrees 20 minutes 50 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed forest litter; abrupt smooth boundary.

A—1 to 11 inches; pale brown (10YR 6/3) gravelly ashy loam, brown (10YR 4/3) moist; weak medium crumb structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; many fine and medium tubular pores; 15 percent gravel and 2 percent cobbles; NaF pH 9.5; slightly acid (pH 6.2); gradual smooth boundary.

2Bw—11 to 19 inches light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium crumb structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; many fine and medium tubular pores; 5 percent gravel and 2 percent cobbles; NaF pH 9.0; slightly acid (pH 6.2); clear smooth boundary.

2C1—19 to 31 inches; yellowish brown (10YR 5/6) very gravelly loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine roots; many medium and coarse tubular pores; 30 percent gravel and 10 percent cobbles; NaF pH 8.5; slightly acid (pH 6.4); gradual smooth boundary.

2C2—31 to 45 inches; light yellowish brown (10YR 6/4) extremely cobbly sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine and medium roots; common fine and medium tubular pores; 20 percent gravel and 45 percent cobbles; NaF pH 8.0; slightly acid (pH 6.4); abrupt wavy boundary.

2R—45 inches; sandstone.

Thickness of volcanic ash influence: 7 to 12 inches

Depth to bedrock: 40 to 60 inches

Particle-size control section: Averages 5 to 18 percent clay and 35 to 80 percent rock fragments

A horizon:

Value—5 or 6 dry

Chroma—1 to 4 dry, 3 or 4 moist

Content of clay—5 to 8 percent

Reaction—slightly acid or neutral

2Bw horizon:

Value—5 or 6 dry

Chroma—3 or 4 dry or moist

Texture—gravelly loam, very gravelly loam, or very gravelly sandy loam

Content of clay—10 to 18 percent

Reaction—slightly acid or neutral

2C horizon:

Hue—10YR or 2.5Y

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very gravelly sandy loam or very gravelly loam in the upper part and extremely cobbly sandy loam or extremely cobbly loamy sand in the lower part

Content of clay—5 to 10 percent

Reaction—slightly acid or moderately acid

Selah Series

Depth class: Moderately deep to a duripan

Drainage class: Well drained

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Position on landscape: Dissected terraces

Parent material: Loess and alluvium

Slope range: 0 to 30 percent

Elevation: 1,500 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Argiduridic
Durixerolls

Typical pedon of Selah loam in Kittitas County, about 5 miles south of Kittitas, Washington; about 480 feet east and 1,300 feet south of the northwest corner of section 1, T. 16 N., R. 19 E.; latitude 46 degrees 54 minutes 30 seconds north and longitude 120 degrees 24 minutes 12 seconds west; NAD 83.

A1—0 to 3 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure parting to weak fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine interstitial and very few fine tubular pores; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

A2—3 to 9 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and very fine roots; few fine interstitial and tubular pores; 5 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt1—9 to 17 inches; brown (10YR 5/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; few distinct clay films in root channels and pores; common fine and very fine roots; many fine interstitial and common fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.4); abrupt wavy boundary.

Bt2—17 to 21 inches; brown (10YR 6/3) cobbly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; very hard, friable, sticky and plastic; common very fine roots; many fine interstitial and common very fine tubular pores; common distinct clay films on faces of peds and in pores; 10 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.6); abrupt wavy boundary.

2Bkqm1—21 to 31 inches; indurated, lime- and silica-cemented duripan; abrupt wavy boundary.

2Bkqm2—31 to 60 inches; weakly cemented to strongly cemented, stratified alluvial material.

Thickness of mollic epipedon: 7 to 17 inches

Depth to a duripan: 20 to 40 inches

Particle-size control section: Averages 18 to 35 percent clay and 0 to 20 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 20 percent

Reaction—neutral or slightly acid

Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—silty clay loam, clay loam, or silt loam in the upper part and cobbly clay loam, gravelly clay loam, or clay loam in the lower part
Content of clay—22 to 45 percent
Calcium carbonate equivalent—0 to 3 percent
Reaction—neutral or slightly alkaline

2Bkqm1 horizon:

Cementation—strongly cemented

2Bkqm2 horizon:

Cementation—weakly cemented to strongly cemented

Shinn Series

Depth class: Very shallow

Drainage class: Well drained

Position on landscape: Summits of hills and dissected plateaus

Parent material: Colluvium and residuum derived from basalt with loess and a small amount of volcanic ash in the upper part

Slope range: 0 to 30 percent

Elevation: 1,800 to 5,000 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 110 to 150 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Ultic Argixerolls

Typical pedon of Shinn very cobbly ashy loam in Kittitas County, Washington, about 9 miles southwest of Ellensburg; about 1,500 feet north and 1,200 feet west of the southeast corner of section 19, T. 16 N., R. 18 E.; latitude 46 degrees 51 minutes 34 seconds north and longitude 120 degrees 37 minutes 5 seconds west; NAD 83.

A—0 to 2 inches; brown (10YR 4/3) very cobbly ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to moderate fine and medium granular; slightly hard, friable, nonsticky and nonplastic; many very fine roots; few fine irregular pores; 20 percent gravel and 25 percent cobbles; neutral; clear smooth boundary.

Bt1—2 to 6 inches; brown (7.5YR 5/4) extremely cobbly clay loam, dark brown (7.5YR 3/3) moist; moderate very fine and fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common distinct clay films that are reddish brown (5YR 4/4) dry and are on faces of peds and rock fragments; 40 percent gravel and 30 percent cobbles; neutral; clear wavy boundary.

Bt2—6 to 9 inches; brown (7.5YR 5/3) extremely cobbly clay loam, dark brown (7.5YR 3/3) moist; moderate very fine subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; common very fine and fine roots; common fine and medium irregular pores; common distinct clay films that are yellowish red (5YR 4/6) dry and are on faces of peds and rock fragments; 20 percent gravel and 65 percent cobbles; neutral; abrupt irregular boundary.

2R—9 inches; basalt.

Thickness of mollic epipedon: 0 to 9 inches

Thickness of volcanic ash influence: 0 to 3 inches

Depth to bedrock: 4 to 10 inches

Particle-size control section: Averages 23 to 33 percent clay and 35 to 75 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 to 4 dry or moist

Content of clay—15 to 20 percent

Reaction—neutral or slightly acid

Bt horizon:

Hue—5YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—extremely cobbly clay loam, extremely gravelly clay loam, very cobbly loam, very gravelly clay loam, or extremely gravelly loam

Content of clay—23 to 33 percent

Shushuskin Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes and dissected plateaus

Parent material: Colluvium and some residuum derived from basalt with loess and an influence of volcanic ash in the upper part

Slope range: 3 to 25 percent

Elevation: 2,000 to 4,200 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Shushuskin ashy loam in Kittitas County, Washington, about 5.5 miles south of Thorp; about 450 feet west and 1,650 feet north of the southeast corner of section 3, T. 17 N., R. 17 E.; latitude 46 degrees 59 minutes 23 seconds north and longitude 120 degrees 41 minutes 23 seconds west; NAD 83.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; weak fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine irregular and few very fine tubular pores; slightly acid (pH 6.2); abrupt smooth boundary.

A—4 to 8 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular and few very fine tubular pores; slightly acid (pH 6.2); abrupt smooth boundary.

AB—8 to 13 inches; brown (10YR 4/3) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular and tubular pores; 10 percent very coarse cylindrical cicada casts; neutral (pH 6.8); abrupt wavy boundary.

2Bt1—13 to 19 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; common distinct pressure faces on peds and few faint clay bridges in pores; 15 percent very coarse cylindrical cicada casts; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

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2Bt2—19 to 23 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure parting to moderate fine subangular blocky; very hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine tubular pores; many distinct pressure faces on peds, few distinct brown (10YR 4/3) pressure faces on vertical faces of peds, and common distinct brown (10YR 4/3) clay films and clay bridges in pores; 15 percent very coarse cylindrical cicada casts; 5 percent gravel; neutral (pH 7.0); clear wavy boundary.

3Btb—23 to 32 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure parting to fine subangular blocky; very hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine tubular pores; many distinct pressure faces on peds, few distinct dark brown (7.5YR 3/4) clay films on faces of peds, and many distinct dark brown (7.5YR 3/4) clay films and clay bridges in pores; 30 percent gravel and 15 percent cobbles; neutral (pH 7.0); abrupt irregular boundary.

4R—32 inches; fractured basalt.

Thickness of mollic epipedon: 20 to 35 inches

Thickness of volcanic ash influence: 10 to 18 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 27 to 35 percent clay and 5 to 15 percent rock fragments

Ap horizon:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Content of clay—18 to 22 percent

Reaction—neutral or slightly acid

A horizon:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Texture—ashy loam or ashy silt loam

Content of clay—18 to 22 percent

Reaction—neutral or slightly acid

AB horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or ashy silt loam

Content of clay—18 to 22 percent

Reaction—neutral or slightly acid

2Bt horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—clay loam, silty clay loam, or loam in the upper part and clay loam or silty clay loam in the lower part

Content of clay—25 to 35 percent

3Btb horizon:

Value—4 or 5 dry

Chroma—3 or 4 dry or moist

Texture—clay loam, gravelly clay loam, or very gravelly clay loam

Content of clay—28 to 35 percent

Sketter Series

Depth class: Moderately deep to a duripan

Drainage class: Well drained

Position on landscape: Fan remnants, terraces, and till plains

Parent material: Alluvium and glacial drift with loess and volcanic ash mixed in the upper part

Slope range: 0 to 15 percent

Elevation: 1,600 to 3,100 feet

Mean annual precipitation: 12 to 15 percent

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Vitrandic Durixerolls

Typical pedon of Sketter cobbly ashy loam in Kittitas County, Washington, about 5 miles northeast of Ellensburg; about 800 feet north and 1,800 feet west of the southeast corner of section 34, T. 19 N., R. 19 E.; Colockum Pass SW, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 5 minutes 28 seconds north and longitude 120 degrees 26 minutes 24 seconds west; NAD 83.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) cobbly ashy loam, black (10YR 2/1) moist; moderate medium subangular blocky structure parting to moderate medium and coarse granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common very fine tubular pores; 5 percent gravel and 15 percent cobbles; NaF pH 8.5; neutral (pH 6.6); abrupt smooth boundary.

BA—6 to 10 inches; very dark grayish brown (10YR 3/2) gravelly ashy loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine irregular and tubular pores; 30 percent gravel and 25 percent cobbles; NaF pH 8.5; neutral (pH 6.6); clear smooth boundary.

2Bt—10 to 21 inches; dark yellowish brown (10YR 4/4) extremely cobbly sandy clay, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few very fine pores; common distinct dark brown (7.5YR 3/3) clay films lining pores and on faces of peds; 40 percent gravel and 30 percent cobbles; NaF pH 8.5; neutral (pH 6.8); abrupt smooth boundary.

3Bstqm—21 to 24 inches; very pale brown (10YR 7/3) dense alluvium that breaks to extremely gravelly sandy loam, brown (10YR 5/3) moist; massive; moderately cemented; few very fine roots in vertical seams and many very fine roots concentrated at upper boundary; few very fine pores in seams and around rock fragments and common very fine pores in matrix; common prominent dark brown (7.5YR 4/4) clay films in vertical seams; 1- to 2-millimeter prominent brown (7.5YR 4/3) concentrations at upper boundary; common distinct light yellowish brown (10YR 6/4) coatings around rock fragments; common prominent black (N 2/0) iron-manganese stains around rock fragments and in pores and seams; 55 percent gravel and 10 percent cobbles; NaF pH 8.6; neutral (pH 6.8); clear wavy boundary.

3Bsqm—24 to 55 inches; very pale brown (10YR 7/4) dense alluvium that breaks to extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; moderately cemented; few very fine pores in seams and around rock fragments and common very fine and fine pores in matrix; common distinct light yellowish brown (10YR 6/4) coatings around rock fragments; common coatings of silica on bottom of rock fragments; common prominent black (N 2/0) iron-manganese stains

around rock fragments and in seams and pores; 50 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 6.8); clear wavy boundary.

3Bs—55 to 60 inches; light yellowish brown (2.5Y 6/3) extremely gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; weakly cemented; common very fine, fine, and medium pores; few prominent black (N 2/0) iron-manganese stains around rock fragments; 60 percent gravel and 15 percent cobbles; NaF pH 8.0; neutral (pH 7.0)

Thickness of mollic epipedon: 20 to 30 inches

Thickness of volcanic ash influence: 7 to 20 inches

Depth to duripan: 20 to 40 inches

Particle-size control section: 35 to 45 percent clay and 40 to 80 percent rock fragments

Reaction: Neutral or slightly acid throughout

Ap horizon and A horizon (where present):

Hue—10YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—18 to 22 percent

BA horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—gravelly ashy loam or very gravelly ashy loam

Content of clay—24 to 27 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly clay, very gravelly clay loam, or extremely gravelly sandy clay

Content of clay—35 to 45 percent

3Bstqm and 3Bsqm horizons:

Cementation—moderately cemented

3Bs horizon:

Cementation—weakly cemented

Texture—extremely gravelly sandy loam or very gravelly sandy loam

Sohappy Taxadjunct

Depth class: Deep

Drainage class: Well drained

Position on landscape: Structural benches, footslopes, and toeslopes of hills

Parent material: Colluvium and alluvium over basalt with loess in the upper part

Slope range: 3 to 45 percent

Elevation: 500 to 3,000 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Xeric Haplocalcids

Typical pedon of Sohappy silt loam in Kittitas County, Washington, about 4 miles northwest of Vantage; 1,640 feet east and 450 feet north of the southwest corner of

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section 35, T. 18 N., R. 22 E.; latitude 47 degrees 4 minutes 5 seconds north and longitude 120 degrees 2 minutes 32 seconds west; NAD 83.

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate thin and medium platy structure parting to weak fine subangular blocky; soft, very friable, nonsticky and nonplastic; common fine and medium and few coarse roots; many very fine and fine irregular pores; neutral (pH 7.0); clear smooth boundary.

Bw1—4 to 18 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; soft, very friable, nonsticky and nonplastic; common fine and medium and few coarse roots; many very fine and fine irregular pores; moderately alkaline (pH 8.0); clear smooth boundary.

Bw2—18 to 32 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, firm, nonsticky and nonplastic; few fine, medium, and coarse roots; many very fine and fine irregular pores; 5 percent basalt gravel; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Bk1—32 to 43 inches; light brownish gray (10YR 6/2) gravelly silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine and medium roots; common fine irregular pores; 10 percent basalt gravel and 5 percent basalt cobbles; disseminated lime and thin coatings of lime on fragments; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

2Bk2—43 to 51 inches; light brownish gray (10YR 6/2) very cobbly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine and very fine roots; common fine irregular pores; 15 percent basalt gravel and 25 percent basalt cobbles; disseminated lime and thin coatings of lime on fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

3R—51 to 60 inches; basalt.

Depth to bedrock: 50 to 60 inches

Depth to calcic horizon: 20 to 40 inches

Particle-size control section: Averages 10 to 18 percent clay and 10 to 30 percent rock fragments

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Content of clay—5 to 15 percent

Reaction—slightly alkaline or moderately alkaline

Bw horizon:

Value—5 to 7 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—silt loam or loam

Content of clay—10 to 15 percent

Reaction—neutral to moderately alkaline

2Bk1 horizon:

Hue—10YR or 7.5YR

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—gravelly silt loam, cobbly silt loam, or cobbly loam

Content of clay—15 to 25 percent

Calcium carbonate equivalent—5 to 20 percent

Reaction—moderately alkaline or strongly alkaline

2Bk2 horizon:

Hue—10YR or 7.5YR

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—extremely gravelly loam, extremely cobbly clay loam, or very cobbly loam

Content of clay—15 to 28 percent

Calcium carbonate equivalent—20 to 35 percent

Reaction—moderately alkaline or strongly alkaline

Spexarth Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Volcanic ash mixed with colluvium and residuum derived from sandstone and siltstone

Slope range: 30 to 60 percent

Elevation: 2,500 to 5,400 feet

Mean annual precipitation: 45 to 60 inches

Mean annual air temperature: 41 to 43 degrees F

Frost-free period: 40 to 80 days

Taxonomic classification: Ashy over loamy, glassy over isotic Typic Vitricryands

Typical pedon of Spexarth ashy sandy loam in Kittitas County, Washington, about 7 miles southwest of Cle Elum; 1,750 feet west and 1,700 feet south of the northeast corner of section 16, T. 19 N., R. 14 E.; Ronald, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 8 minutes 12 seconds north and longitude 121 degrees 5 minutes 54 seconds west; NAD 83.

Oi—0 to 1 inch; partially decomposed forest litter.

A1—1 to 2 inches; light gray (10YR 7/1) ashy sandy loam, grayish brown (10YR 5/2) moist; single grain; soft, very friable, nonsticky and nonplastic; common very fine roots; moderately acid (pH 5.6); abrupt smooth boundary.

A2—2 to 5 inches; yellowish brown (10YR 5/4) ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and few coarse roots; many very fine and fine irregular pores; 10 percent sandstone paragravel; NaF pH 11.5; moderately acid (pH 5.6); clear wavy boundary.

Bw1—5 to 11 inches; light yellowish brown (10YR 6/4) paragravelly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common fine and medium roots; common very fine and fine irregular pores; 20 percent sandstone paragravel; NaF pH 11.5; moderately acid (pH 5.6); clear wavy boundary.

Bw2—11 to 19 inches; light yellowish brown (10YR 6/4) extremely paracobbly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common fine and medium and few coarse roots; common very fine and fine irregular pores; 40 percent sandstone paragravel and 30 percent sandstone paracobbles; NaF pH 11.5; moderately acid (pH 5.6); abrupt wavy boundary.

2BC—19 to 28 inches; light yellowish brown (2.5Y 6/4) very paragravelly sandy loam, olive brown (2.5Y 4/4) moist; massive; soft, very friable, nonsticky and slightly plastic; common fine and few medium roots; common fine irregular pores;

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50 percent sandstone paragravel; NaF pH 9.8; strongly acid (pH 5.2); clear wavy boundary.

2Cr—28 inches; weathered sandstone.

Thickness of volcanic ash influence: 15 to 30 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 4 to 15 percent clay, 0 to 20 percent rock fragments, and 40 to 70 percent pararock fragments in the upper part and 5 to 15 percent clay, 0 to 20 percent rock fragments, and 50 to 70 percent pararock fragments in the lower part.

A1 horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—1 or 2 dry or moist

Content of clay—4 to 8 percent

Reaction—strongly acid or moderately acid

A2 horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—1 or 2 dry or moist

Content of clay—4 to 8 percent

Reaction—strongly acid or moderately acid

Bw horizon:

Value—6 or 7 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Texture—paragravelly ashy sandy loam, ashy loam, gravelly ashy loam, extremely paragravelly ashy loam, or extremely paracobbly ashy sandy loam

Content of clay—5 to 15 percent

Reaction—strongly acid or moderately acid

2BC horizon:

Value—4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—very paragravelly sandy loam, gravelly sandy loam, or very paragravelly loam

Content of clay—5 to 15 percent

Standup Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium derived from rhyolite with an influence of volcanic ash

Slope range: 30 to 60 percent

Elevation: 2,500 to 5,300 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 95 to 130 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, frigid Typic Dystrocherepts

Typical pedon of Standup very gravelly ashy sandy loam in Kittitas County, Washington, about 10 miles northeast of Cle Elum, east 21 miles on Dickey Creek Road; 1,150 feet west and 2,800 feet north of the southeast corner of section 27,

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T. 21 N., R. 16 E., latitude 47 degrees 16 minutes 54 seconds north and longitude 120 degrees 48 minutes 49 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed needles and twigs.

A—1 to 5 inches; light brownish gray (10YR 6/2) very gravelly ashy sandy loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; 35 percent angular gravel and 5 percent angular cobbles; slightly acid (pH 6.4); abrupt wavy boundary.

2Bw1—5 to 19 inches; light gray (10YR 7/2) very gravelly sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; 40 percent angular gravel and 10 percent angular cobbles; slightly acid (pH 6.2); clear wavy boundary.

2Bw2—19 to 26 inches; light gray (10YR 7/2) extremely cobbly sandy loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine and few medium roots; many very fine irregular pores; 35 percent angular gravel and 35 percent angular cobbles; moderately acid (pH 6.0); clear wavy boundary.

2C—26 to 60 inches; light gray (10YR 7/2) extremely cobbly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many very fine irregular pores; 30 percent angular gravel and 50 percent angular cobbles; slightly acid (pH 6.2).

Thickness of volcanic ash influence: 3 to 7 inches

Particle-size control section: 10 to 15 percent clay and 35 to 80 percent rock fragments

A horizon:

Value—5 or 6 dry, 3 to 5 moist

Content of clay—5 to 8 percent

2Bw horizon:

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly sandy loam, extremely gravelly sandy loam, or extremely cobbly sandy loam

Content of clay—10 to 15 percent

Reaction—slightly acid or moderately acid

2C horizon:

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly sandy loam, extremely gravelly sandy loam, or extremely cobbly sandy loam

Content of clay—10 to 15 percent

Reaction—slightly acid or moderately acid

Stemilt Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium and residuum derived from basalt or andesite with loess and volcanic ash in the upper part

Slope range: 5 to 75 percent

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Elevation: 1,700 to 6,200 feet

Mean annual precipitation: 15 to 22 inches

Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 75 to 120 days

Taxonomic classification: Loamy-skeletal, isotic, frigid Vitrandic Argixerolls

Typical pedon of Stemilt ashy loam in Kittitas County, Washington, about 1.5 miles southwest of Bristol; about 2,590 feet east and 1,500 feet south of the northwest corner of section 15, T. 19 N., R. 16 E.; latitude 47 degrees 8 minutes 16 seconds north and longitude 120 degrees 49 minutes 35 seconds west; NAD 83.

Oe—0 to 1 inch; moderately decomposed organic litter of needles, twigs, and leaves.

A—1 to 5 inches; dark grayish brown (10YR 4/2) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine tubular pores; 5 percent cobbles; NaF pH 8.8; neutral (pH 6.8); clear smooth boundary.

AB—5 to 17 inches; brown (10YR 5/3) ashy loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine tubular pores; 5 percent cobbles and 5 percent gravel; NaF pH 8.6; neutral (pH 6.8); clear wavy boundary.

2Bt1—17 to 43 inches; brown (10YR 5/3) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and very plastic; common fine roots; many very fine tubular pores; 30 percent cobbles and 30 percent gravel; few faint clay films in pores and very few faint clay films on faces of peds; neutral (pH 6.8); gradual wavy boundary.

2Bt2—43 to 60 inches; pale brown (10YR 6/3) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, firm, very sticky and very plastic; 30 percent cobbles and 30 percent gravel; common faint clay films in pores; few clay bridges between sand grains; neutral (pH 6.8).

Thickness of mollic epipedon: 10 to 18 inches

Thickness of volcanic ash influence: 10 to 22 inches

Particle-size control section: 18 to 35 percent clay and 35 to 65 percent rock fragments

Reaction: Neutral throughout

A horizon:

Value—4 or 5 dry, 1 to 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or very gravelly ashy loam

Content of clay—10 to 20 percent

AB horizon:

Value—4 to 6 dry

Chroma—2 to 4 dry or moist

Texture—ashy loam, ashy silt loam, cobbly ashy loam, gravelly ashy loam, or very cobbly ashy loam

Content of clay—15 to 23 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 6 dry or moist

Texture—very cobbly clay loam, extremely cobbly clay loam, or very cobbly loam

Content of clay—20 to 35 percent

Stilgar Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Volcanic ash and colluvium derived from andesite, basalt, tuff, and breccia

Slope range: 30 to 60 percent

Elevation: 4,000 to 5,600 feet

Mean annual precipitation: 60 to 80 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 75 days

Taxonomic classification: Ashy-skeletal, amorphic Humic Vitricryands

Typical pedon of Stilgar gravelly ashy sandy loam in Kittitas County, Washington, about 2 miles east of Blowout Mountain; 1,500 feet west and 2,950 feet north of the southeast corner of section 18 T. 19 N., R. 13 E.; Blowout Mountain, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 8 minutes 5 seconds north and longitude 121 degrees 15 minutes 54 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed needles and twigs; abrupt smooth boundary.

A—1 to 9 inches; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, very dark brown (10YR 2/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine and fine irregular pores; 30 percent gravel; NaF pH 9.4; moderately acid (pH 5.6); clear wavy boundary.

AB—9 to 18 inches; brown (10YR 4/3) very gravelly ashy sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine and fine irregular pores; 40 percent gravel; NaF pH 10.0; strongly acid (pH 5.4); gradual wavy boundary.

Bw—18 to 38 inches; yellowish brown (10YR 5/4) very gravelly ashy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common very fine roots; common very fine irregular pores; 50 percent gravel; NaF pH 10.6; strongly acid (pH 5.4); gradual wavy boundary.

2BC—38 to 60 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, nonsticky and slightly plastic; weakly smeary; few very fine roots; common very fine irregular pores; 35 percent gravel and 35 percent cobbles; NaF pH 10.5; strongly acid (pH 5.4).

Thickness of volcanic ash influence: 36 to 60 inches

Particle-size control section: 5 to 15 percent clay and 40 to 65 percent rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—5 to 8 percent

AB horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Texture—very gravelly ashy sandy loam, very gravelly ashy loam, or gravelly ashy sandy loam

Content of clay—5 to 15 percent

Reaction—moderately acid or strongly acid

Bw horizon:

Hue—10YR, 7.5YR, or 2.5Y

Value—5 to 7 dry, 3 to 6 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly ashy loam, extremely cobbly ashy loam, or extremely gravelly ashy sandy loam

Content of clay—5 to 15 percent

Reaction—moderately acid or strongly acid

2BC horizon:

Value—3 or 4 moist

Chroma—3 or 4 dry

Texture—extremely cobbly loam, very gravelly loam, or extremely gravelly sandy loam

Content of clay—5 to 15 percent

Reaction—moderately acid or strongly acid

Stirrup Series

Depth class: Deep and very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Volcanic ash mixed with colluvium derived from andesite

Slope range: 5 to 85 percent

Elevation: 2,700 to 5,400 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 37 to 43 degrees F

Frost-free period: 35 to 85 days

Taxonomic classification: Medial-skeletal over loamy-skeletal, amorphic over isotic
Andic Humicryods

Typical pedon of Stirrup ashy sandy loam in Kittitas County, Washington, about 0.25 mile west of Stampede Pass; about 0.3 mile west on Forest Service Road 212, Spur D; 100 feet south and 1,300 feet east of the northwest corner of section 25, T. 21 N., R. 11 E.; Stampede Pass, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 17 minutes 28 seconds north and longitude 121 degrees 21 minutes 6 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter; abrupt smooth boundary.

E—1 to 4 inches; light gray (7.5YR 7/1) ashy sandy loam, dark gray (5YR 4/1) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; very strongly acid (pH 5.0); abrupt wavy boundary.

Bhs—4 to 8 inches; brown (7.5YR 5/4) gravelly medial sandy loam, dark brown (7.5YR 3/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; weakly smeary; common very fine and fine and few medium roots; 20 percent gravel; NaF pH 12.0; very strongly acid (pH 5.0); clear wavy boundary.

Bs—8 to 14 inches; yellowish brown (10YR 5/4) very gravelly medial loam, brown (7.5YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; weakly smeary; common very fine and fine and few medium roots; 40 percent gravel; NaF pH 12.0; very strongly acid (pH 4.8); clear wavy boundary.

Bw—14 to 24 inches; light yellowish brown (10YR 6/4) very gravelly medial loam, brown (10YR 4/3) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; weakly smeary; few very fine and fine

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roots; 50 percent gravel; NaF pH 11.5; very strongly acid (pH 4.8); clear wavy boundary.

BC—24 to 36 inches; light yellowish brown (10YR 6/4) extremely gravelly medial sandy loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine roots; 70 percent gravel; NaF pH 10.6; very strongly acid (pH 5.0); clear wavy boundary.

2C—36 to 61 inches; pale yellow (2.5Y 7/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; 80 percent gravel; NaF pH 11.0; very strongly acid (pH 5.0).

Thickness of volcanic ash influence: 25 to 36 inches

Depth to bedrock: 40 to 60 inches or more

Particle-size control section: Averages 5 to 15 percent clay and 40 to 70 percent rock fragments

E horizon:

Hue—10YR, 5YR, or 7.5YR

Value—3 to 6 moist

Chroma—1 or 2 dry, 1 to 3 moist

Content of clay—5 to 8 percent

Reaction—very strongly acid or moderately acid

Bhs horizon:

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—4 to 6 dry

Texture—gravelly medial sandy loam, medial loam, or gravelly medial loam

Content of clay—5 to 15 percent

Reaction—very strongly acid or moderately acid

Bs horizon:

Hue—7.5YR or 10YR

Value—3 or 4 moist

Texture—very gravelly medial loam, very gravelly medial sandy loam, or very cobbly medial sandy loam

Content of clay—5 to 15 percent

Reaction—very strongly acid to slightly acid

Bw horizon:

Hue—10YR or 2.5Y

Value—4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly medial loam, very gravelly medial sandy loam, or very cobbly medial sandy loam

Content of clay—5 to 15 percent

Reaction—very strongly acid to slightly acid

BC horizon:

Texture—extremely gravelly medial sandy loam, extremely cobbly medial sandy loam, or very gravelly medial sandy loam

Content of clay—5 to 19 percent

Reaction—very strongly acid or strongly acid

2C horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—extremely gravelly sandy loam or extremely cobbly sandy clay loam

Content of clay—15 to 23 percent

Reaction—very strongly acid or strongly acid

Sutkin Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Colluvium and residuum derived from basalt with an influence of loess in the upper part

Slope range: 25 to 45 percent

Elevation: 2,600 to 3,700 feet

Mean annual precipitation: 18 to 22 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 130 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, frigid Ultic Haploxerolls

Typical pedon of Sutkin stony loam in Yakima County, Washington, about 27 miles west of Yakima; 1,100 feet west and 2,300 feet south of the northeast corner of section 14, T. 12 N., R. 14 E.; Foundation Ridge, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 31 minutes 48 seconds north and longitude 121 degrees 1 minute 41 seconds west; NAD 27.

Oi—0 to 1 inch; partially decomposed forest litter.

A—1 to 11 inches; dark brown (10YR 3/3) stony loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and common coarse roots; 5 percent stones, 5 percent cobbles, and 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bw1—11 to 21 inches; dark yellowish brown (10YR 4/4) very cobbly loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common coarse and many fine roots; 30 percent gravel and 20 percent cobbles; neutral (pH 6.6); clear irregular boundary.

Bw2—21 to 39 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common coarse and many fine roots; 35 percent gravel and 35 percent cobbles; neutral (pH 6.6); clear wavy boundary.

C—39 to 60 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, friable, slightly sticky and moderately plastic; common fine and coarse roots; 30 percent gravel and 40 percent cobbles; neutral (pH 6.6).

Thickness of mollic epipedon: 10 to 18 inches

Particle-size control section: 18 to 30 percent clay and averages 40 to 70 percent rock fragments

Reaction: Slightly acid or neutral throughout

A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—3 or 4 dry, 1 to 3 moist

Content of clay—15 to 25 percent

Reaction—slightly alkaline or moderately alkaline

Bw horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—very cobbly loam, extremely cobbly loam, or very gravelly loam

Content of clay—18 to 27 percent

C horizon:

Hue—10YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—extremely cobbly loam, very cobbly loam, or very cobbly clay loam

Content of clay—20 to 30 percent

Swauk Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Moraines

Parent material: Glacial till and loess

Slope range: 0 to 30 percent

Elevation: 1,300 to 3,400 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 140 days

Taxonomic classification: Fine, mixed, superactive, mesic Ultic Palexerolls

Typical pedon of Swauk loam in Kittitas County, Washington, about 1 mile east of Verdun Junction on Swauk Prairie; 810 feet west and 2,160 feet south of the northeast corner of section 29, T. 20 N., R. 17 E.; latitude 47 degrees 11 minutes 55 seconds north and longitude 120 degrees 44 minutes 1 second west; NAD 83.

Ap—0 to 5 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; many fine roots; many very fine irregular pores; 10 percent gravel; slightly acid (pH 6.2); abrupt wavy boundary.

Bt1—5 to 11 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; many fine tubular pores; common distinct clay films on faces of peds; 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt2—11 to 18 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and very plastic; common very fine roots; many fine tubular pores; common distinct clay films on faces of peds and in pores; 15 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.

Bt3—18 to 28 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 3/4) moist; strong fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few fine roots; common fine distinct light brownish gray (10YR 6/2) skeletons; common fine tubular pores; many prominent strong dark brown (10YR 3/3) clay films; 10 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.

Bt4—28 to 31 inches; light yellowish brown (2.5Y 6/4) clay, olive brown (2.5Y 4/4) moist; common fine faint mottles that are yellowish brown (10YR 5/6) moist; strong fine and medium subangular blocky structure; very hard, very firm, moderately sticky and very plastic; few fine roots; common fine tubular pores; many distinct clay films that are dark brown (7.5YR 4/4) moist and are on faces of peds and common distinct clay films that are dark brown (10YR 3/2) moist and are on faces

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of peds and lining pores; 10 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.

Cd1—31 to 37 inches; light yellowish brown (2.5Y 6/4) dense glacial till that breaks to gravelly clay loam, olive brown (2.5Y 4/4) moist; moderate medium platy structure; hard, extremely firm, moderately sticky and very plastic; very few very fine tubular pores; many distinct clay films that are dark yellowish brown (10YR 4/4) moist and few prominent clay films that are very dark grayish brown (10YR 3/2) moist on faces of peds; 15 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Cd2—37 to 60 inches; light yellowish brown (2.5Y 6/4) dense glacial till that breaks to gravelly clay loam, olive brown (2.5Y 4/4) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few very fine and fine irregular pores; common distinct clay films that are dark yellowish brown (10YR 4/4) moist, few distinct clay films that are dark yellowish brown (10YR 4/4) moist on faces of peds, and few distinct clay bridges that are very dark gray (10YR 3/1) moist between mineral grains; 15 percent gravel; slightly acid (pH 6.4).

Thickness of mollic epipedon: 10 to 20 inches

Depth to dense glacial till: 29 to 40 inches

Particle-size control section: 35 to 50 percent clay and 0 to 15 percent rock fragments

Ap horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—15 to 20 percent

Reaction—moderately acid or slightly acid

Bt1 and Bt2 horizons:

Value—4 or 5 dry

Chroma—3 or 4 dry or moist

Texture—clay loam or gravelly clay loam

Content of clay—27 to 35 percent

Bt3 and Bt4 horizons:

Hue—10YR, 7.5YR, 5YR, or 2.5Y

Value—5 or 6 dry, 4 or 5 moist

Texture—clay or gravelly clay

Content of clay—40 to 50 percent

Reaction—slightly acid or neutral

Cd horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—gravelly clay loam or clay loam

Content of clay—30 to 35 percent

Reaction—slightly acid or neutral

Tanaha Series

Depth class: Moderately deep

Drainage class: Moderately well drained

Position on landscape: Flood plains and alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Elevation: 1,500 to 2,000 feet

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Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Durixerolls

Typical pedon of Tanaha ashy loam in Kittitas County, Washington, about 1 mile south of Kittitas; about 1,200 feet north and 1,100 feet east of the southeast corner of section 14, T. 17 N., R. 19 E.; latitude 46 degrees 57 minutes 35 seconds north and longitude 120 degrees 25 minutes 0 seconds west; NAD 83.

Ap—0 to 7 inches; grayish brown (10YR 5/2) ashy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; slightly alkaline (pH 7.5); abrupt smooth boundary.

AB—7 to 12 inches; grayish brown (10YR 5/2) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; slightly alkaline (pH 7.5); clear wavy boundary.

Btk1—12 to 20 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak very fine subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine pores; few faint clay films lining pores; common distinct light gray (10YR 7/2) coatings of lime lining pores and on faces of peds; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Btk2—20 to 32 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and few fine pores; few faint clay films lining pores; common distinct light gray (10YR 7/2) coatings of lime lining pores and on faces of peds; strongly effervescent; moderately alkaline (pH 7.9); gradual wavy boundary.

Btkqm—32 to 38 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine prismatic structure parting to fine angular blocky; moderately cemented; very hard, very firm, slightly sticky and nonplastic; few very fine roots; many very fine and common fine pores; few faint clay films lining pores; many prominent light gray (10YR 7/2) coatings of lime lining pores and on faces of peds; strongly effervescent; moderately alkaline (pH 8.0); abrupt clear boundary.

2Bg1—38 to 45 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; massive; hard, friable, slightly sticky and nonplastic; many very fine and common fine pores; common fine prominent brownish yellow (10YR 6/8) iron accumulations; slightly alkaline (pH 7.5); clear wavy boundary.

2Bg2—45 to 60 inches; pale brown (10YR 6/3) loam, brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine pores; common fine prominent brownish yellow (10YR 6/8) iron accumulations; slightly alkaline (pH 7.5).

Thickness of mollic epipedon: 20 to 40 inches

Thickness of volcanic ash influence: 8 to 14 inches

Depth to a duripan: 20 to 40 inches

Irrigation-induced water table: Present some time during the year

Particle-size control section: 15 to 25 percent clay and 0 to 5 percent rock fragments

Ap horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Content of clay—18 to 25 percent
Reaction—slightly alkaline or moderately alkaline

AB horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Texture—ashy loam or ashy silt loam
Content of clay—18 to 25 percent
Reaction—slightly alkaline or moderately alkaline

Btk horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Texture—clay loam or silty clay loam
Content of clay—27 to 35 percent
Calcium carbonate equivalent—5 to 15 percent

Btkqm horizon:

Cementation—weakly cemented or moderately cemented duripan

2Bg horizon:

Value—5 or 6 dry, 2 to 4 moist
Chroma—2 or 3 dry or moist
Texture—loam, clay loam, or silty clay loam
Content of clay—20 to 30 percent
Calcium carbonate equivalent—1 to 5 percent

Taneum Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Backslopes and shoulders of hills

Parent material: Colluvium and residuum derived from sandstone with loess and a minor amount of volcanic ash in the upper part

Slope range: 5 to 15 percent

Elevation: 2,900 to 3,500 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 49 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Typic Argixerolls

Typical pedon of Taneum loam in Yakima County, Washington; about 2,000 feet west and 20 feet south of the northeast corner of section 29, T. 14 N., R. 16 E.; latitude 46 degrees 54 minutes 2 seconds north and longitude 120 degrees 42 minutes 16 seconds west; NAD 83.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; many roots; neutral (pH 6.6); abrupt wavy boundary.

A2—4 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; neutral (pH 6.6); abrupt wavy boundary.

AB—10 to 14 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; neutral (pH 6.6); clear wavy boundary.

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Bt1—14 to 27 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few roots; few fine tubular pores; few clay films on surface of peds; neutral (pH 6.6); clear wavy boundary.

Bt2—27 to 43 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few roots; few fine tubular pores; few thin clay films on surface of peds; neutral (pH 6.8); clear wavy boundary.

C1—43 to 50 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few roots; common fine tubular pores; neutral (pH 6.8); abrupt wavy boundary.

C2—50 to 60 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; massive; hard, friable, nonsticky and nonplastic; common fine tubular pores; neutral (pH 7.0).

Thickness of mollic epipedon: 12 to 19 inches

Particle-size control section: 27 to 35 percent clay and 0 to 5 percent rock fragments

Reaction: Neutral throughout

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—10 to 20 percent

AB horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Content of clay—10 to 20 percent

Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 to 6 dry or moist

Texture—clay loam or silty clay loam

Content of clay—27 to 35 percent

C horizon:

Chroma—3 or 4 dry or moist

Texture—sandy loam or loam

Content of clay—5 to 20 percent

Tankseil Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Colluvium with loess and an influence of volcanic ash in the upper part

Slope range: 15 to 75 percent

Elevation: 1,000 to 3,800 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Vitrandic Argixerolls

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Typical pedon of Tanksel ashy loam in Kittitas County, Washington, about 10 miles south of Ellensburg; about 1,800 feet north and 2,500 feet west of the southeast corner of section 31, T. 16 N., R. 19 E.; Wymer, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 49 minutes 49 seconds north and longitude 120 degrees 29 minutes 53 seconds west; NAD 83.

- A1—0 to 4 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to very fine and fine granular; soft, very friable, nonsticky and nonplastic; many very fine and few fine and coarse roots; many very fine and fine vesicular pores; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.
- A2—4 to 8 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to weak very fine, fine, and medium granular; soft, friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine and fine vesicular pores; 10 percent gravel and 2 percent cobbles; neutral (pH 7.0); clear wavy boundary.
- AB—8 to 17 inches; dark grayish brown (10YR 4/2) very gravelly ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine, medium, and coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; many very fine and few fine roots; many very fine and fine vesicular pores; 35 percent gravel and 5 percent cobbles; neutral (pH 7.0); clear wavy boundary.
- 2Bt1—17 to 20 inches; yellowish brown (10YR 5/4) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine, medium, and coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine and fine tubular pores; common distinct clay films on faces of peds; 45 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- 2Bt2—20 to 28 inches; brown (7.5YR 5/4) extremely cobbly clay loam, dark brown (10YR 3/3) moist; hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine and fine tubular pores; many distinct clay films on faces of peds and rock fragments; 40 percent gravel and 25 percent cobbles; slightly alkaline (pH 7.6); abrupt wavy boundary.
- 3R—28 inches; basalt.

Thickness of mollic epipedon: 20 to 29 inches

Thickness of volcanic ash influence: 7 to 17 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: Averages 35 to 50 percent clay and 35 to 70 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam, gravelly ashy loam, or ashy silt loam

Content of clay—15 to 25 percent

AB horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly ashy loam, gravelly ashy loam, or gravelly ashy silt loam

Content of clay—15 to 25 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly clay loam or very cobbly clay loam in the upper part and extremely cobbly clay loam, very gravelly clay loam, or extremely gravelly clay in the lower part

Content of clay—30 to 50 percent

Teanaway Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Mountain slopes, terraces, and terrace escarpments

Parent material: Loess over glacial till or outwash with an influence of volcanic ash in the upper part

Slope range: 0 to 50 percent

Elevation: 1,800 to 3,600 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 80 to 120 days

Taxonomic classification: Fine-loamy, mixed, superactive, frigid Haplic Palexeralfs

Typical pedon of Teanaway ashy loam in Kittitas County, Washington, about 0.5 mile south of Cle Elum; 2,500 feet south and 1,200 feet west of the northeast corner of section 34, T. 20 N., R. 15 E.; Cle Elum, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 10 minutes 58 seconds north and longitude 120 degrees 56 minutes 49 seconds west; NAD 83.

Oi and Oe—0 to 3 inches; slightly decomposed and moderately decomposed forest litter; abrupt smooth boundary.

A—3 to 7 inches; grayish brown (10YR 5/2) ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium and common coarse roots; many very fine irregular pores, 5 percent gravel; NaF pH 8.0; neutral (pH 6.8); abrupt smooth boundary.

BA—7 to 13 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine irregular pores; 5 percent gravel; NaF pH 8.0; moderately acid (pH 6.0); clear wavy boundary.

E/Bt—13 to 22 inches; about 70 percent (E part) pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; few coarse and common fine and medium roots; many very fine irregular and tubular pores; about 30 percent (Bt part) yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; hard, firm, slightly sticky and slightly plastic; few coarse and common fine and medium roots; common very fine tubular and irregular pores; few faint clay films in pores; 5 percent gravel; NaF pH 8.0; moderately acid (pH 6.0); clear wavy boundary.

Bt1—22 to 33 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and slightly plastic; few coarse and common fine and medium roots; common very fine tubular pores; common distinct brown (7.5YR 4/4) and faint dark yellowish brown (10YR 4/6) clay films on vertical faces of coarse prisms and in tubular pores; common distinct pale brown (10YR 6/3) patches of skeletalans on vertical faces of prisms; 5 percent gravel; NaF pH 7.8; moderately acid (pH 5.7); clear wavy boundary.

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Bt2—33 to 42 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; common distinct brown (7.5YR 4/4) and faint dark yellowish brown (10YR 4/6) clay films on vertical faces of coarse prisms and in tubular pores; few tongues of light gray (10YR 7/2), 5- to 15-millimeter-wide depletions on vertical faces of prisms; 5 percent gravel; NaF pH 7.8; moderately acid (pH 5.8); clear wavy boundary.

Bt3—42 to 51 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; common distinct brown (7.5YR 4/4) and faint dark yellowish brown (10YR 4/6) clay films on vertical faces of coarse prisms and in tubular pores; few tongues of light gray (10YR 7/2), 5- to 15-millimeter-wide depletions on vertical faces of prisms; 10 percent gravel; NaF pH 7.8; slightly acid (pH 6.3); abrupt wavy boundary.

2Btb—51 to 60 inches; yellowish brown (10YR 5/4) gravelly loam, brown (10YR 4/3) moist; strong very coarse prismatic structure; extremely hard, very firm, slightly sticky and slightly plastic; few very fine roots between peds; common very fine pores; many prominent very dark grayish brown (10YR 3/2) clay films on faces of very coarse prisms and common distinct brown (7.5YR 4/4) clay films in pores; few tongues of light gray (10YR 7/2), 5- to 15-millimeter-wide depletions on vertical faces of prisms; 20 percent gravel; NaF pH 7.8; neutral (pH 6.9).

Thickness of volcanic ash influence: 3 to 5 inches

Perched water table: Present some time during the year

Depth to 2Btb horizon: 40 to 60 inches

Particle-size control section: Averages 18 to 30 percent clay and 0 to 15 percent rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—10 to 13 percent

Reaction—moderately acid to neutral

BA horizon:

Chroma—3 or 4 dry or moist

Texture—silt loam or loam

Content of clay—10 to 13 percent

Reaction—moderately acid or slightly acid

E/Bt horizon:

E part

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3 dry or moist

Texture—silt loam or loam

Content of clay—10 to 13 percent

Reaction—moderately acid or slightly acid

Bt part

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—silt loam or loam

Content of clay—13 to 18 percent

Reaction—moderately acid or slightly acid

Bt horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Texture—clay loam, silt loam, or loam in the upper part and clay loam, loam, gravelly clay loam, or gravelly loam in the lower part

Content of clay—17 to 30 percent in the upper part and 18 to 30 percent in the lower part

Reaction—moderately acid or slightly acid

2Btb horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—gravelly loam, clay loam, loam, or gravelly clay loam

Content of clay—25 to 35 percent

Reaction—slightly acid or neutral

Tekison Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Summits, shoulders, and backslopes of mountains and canyonsides

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess and volcanic ash in the upper part

Slope range: 0 to 60 percent

Elevation: 1,800 to 4,600 feet

Mean annual precipitation: 16 to 25 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 150 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Ultic Palexerolls

Typical pedon of Tekison stony loam in Kittitas County, Washington, about 10 miles north of Ellensburg; 50 feet south and 800 feet west of the northeast corner of section 12, T. 19 N., R. 18 E.; Reecer Canyon, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 9 minutes 39 seconds north and longitude 120 degrees 31 minutes 18 seconds west; NAD 83.

Oe—0 to 1 inch; partially decomposed forest litter.

A—1 to 8 inches; dark brown (10YR 3/3) stony loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; common fine and many very fine tubular pores; 10 percent gravel and 6 percent stones; moderately acid (pH 5.8); abrupt smooth boundary.

AB—8 to 15 inches; dark yellowish brown (10YR 4/4) extremely cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few coarse and common medium and fine roots; few fine and many very fine tubular pores; 25 percent gravel, 35 percent cobbles, and 5 percent stones; moderately acid (pH 6.0); abrupt smooth boundary.

Bt1—15 to 27 inches; dark yellowish brown (10YR 4/4) extremely cobbly clay, brown (10YR 4/3) moist; strong medium angular blocky structure; very hard, very firm, moderately sticky and very plastic; common medium and fine roots; common very fine tubular pores; many prominent clay films on faces of peds; 40 percent gravel, 25 percent cobbles, and 5 percent stones; moderately acid (pH 5.8); abrupt smooth boundary.

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Bt2—27 to 46 inches; yellowish brown (10YR 5/4) extremely gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, very firm, moderately sticky and very plastic; few fine and medium roots; common very fine tubular pores; continuous prominent clay films on faces of peds; 50 percent gravel, 20 percent cobbles, and 5 percent stones; moderately acid (pH 5.8); clear smooth boundary.

Bt3—46 to 61 inches; yellowish brown (10YR 5/4) extremely gravelly clay, dark brown (10YR 3/3) moist; strong medium angular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few fine and medium roots; common very fine tubular pores; many prominent clay films on faces of peds; 50 percent gravel, 20 percent cobbles, and 5 percent stones; moderately acid (pH 6.0).

Thickness of mollic epipedon: 10 to 20 inches

Particle-size control section: 40 to 55 percent clay and 40 to 70 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 20 percent

Reaction—neutral to moderately acid

AB horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry

Chroma—2 or 3 moist

Texture—extremely cobbly clay loam, very cobbly loam, or very cobbly clay loam

Content of clay—20 to 30 percent

Reaction—slightly acid or moderately acid

Bt horizon:

Hue—10YR, 7.5YR, or 2.5Y

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry, 2 to 4 moist

Texture—extremely cobbly clay, extremely gravelly clay, or very cobbly clay

Content of clay—40 to 55 percent

Reaction—slightly acid or moderately acid

Terence Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Toeslopes, valleysides, and summits of mountains

Parent material: Colluvium and residuum derived from andesite and basalt mixed with volcanic ash

Slope range: 0 to 60 percent

Elevation: 2,500 to 5,700 feet

Mean annual precipitation: 45 to 65 percent

Mean annual air temperature: 38 to 42 degrees F

Frost-free period: 35 to 80 days

Taxonomic classification: Ashy-skeletal, glassy Xeric Vitricryands

Typical pedon of Terence gravelly ashy sandy loam, stony, in Kittitas County, Washington, about 0.5 mile northeast of Lost Lake; 2,200 feet north and 1,050 feet west of the southeast corner of section 27, T. 18 N., R. 15 E., Frost Mountain,

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Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 1 minute 6 seconds north and longitude 120 degrees 56 minutes 34 seconds west; NAD 83.

Oe—0 to 1 inch; moderately decomposed forest litter; abrupt smooth boundary.

A—1 to 6 inches; yellowish brown (10YR 5/4) gravelly ashy sandy loam, dark brown (10YR 3/3) moist; single grain; loose; common very fine and fine roots; 20 percent gravel, 5 percent cobbles, and 0.1 percent surface stones; NaF pH 10.5; moderately acid (pH 5.8); clear wavy boundary.

Bw1—6 to 14 inches; yellowish brown (10YR 5/4) very cobbly ashy loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common fine and medium roots; many very fine and fine irregular pores; 35 percent gravel and 25 percent cobbles; NaF pH 10.2; moderately acid (pH 5.8); gradual wavy boundary.

Bw2—14 to 29 inches; yellowish brown (10YR 5/6) extremely cobbly ashy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few coarse roots; common very fine irregular pores; 30 percent gravel and 40 percent cobbles; NaF pH 9.8; moderately acid (pH 5.8); gradual wavy boundary.

Bw3—29 to 60 inches; yellowish brown (10YR 5/6) extremely cobbly ashy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine roots; common very fine irregular pores; 35 percent gravel and 35 percent cobbles; NaF pH 9.5; moderately acid (pH 5.8).

Thickness of volcanic ash influence: Entire soil profile

Particle-size control section: Averages 7 to 15 percent clay and 40 to 70 percent rock fragments

Reaction: Slightly acid or moderately acid throughout

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—5 to 8 percent

Bw1 horizon:

Value—4 or 5 dry

Chroma—4 to 6 dry or moist

Texture—very cobbly ashy loam, very gravelly ashy loam, or gravelly ashy loam

Content of clay—5 to 15 percent

Bw2 and Bw3 horizons:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—extremely cobbly ashy loam, very gravelly ashy loam, or very cobbly ashy loam

Content of clay—7 to 15 percent

Terlan Series

Depth class: Shallow to a duripan

Drainage class: Well drained

Position on landscape: Fan remnants and alluvial fans

Parent material: Loess and alluvium

Slope range: 0 to 15 percent

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Elevation: 1,500 to 2,600 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 130 to 180 days

Taxonomic classification: Loamy, mixed, superactive, mesic, shallow Argiduridic
Durixerolls

Typical pedon of Terlan gravelly loam in Kittitas County, Washington, about 6 miles southeast of Kittitas in the Badger Pocket area; 2,200 feet east and 1,000 feet south of the northwest corner of section 8, T. 16 N., R. 20 E.; East Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 53 minutes 39 seconds north and longitude 120 degrees 21 minutes 2 seconds west; NAD 83.

Ap—0 to 7 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine and fine roots; few very fine tubular pores; 15 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

Bt—7 to 15 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; few distinct clay films on faces of peds; 15 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

Bkq—15 to 18 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine roots; violently effervescent with disseminated lime; silica coatings on pebbles; 20 percent gravel, 5 percent cobbles, and 20 percent gravel-sized fragments of indurated duripan; moderately alkaline (pH 8.0); abrupt smooth boundary.

2Bkqm1—18 to 26 inches; indurated, lime- and silica-cemented, gravelly duripan; violently effervescent.

2Bkqm2—26 to 60 inches; moderately lime- and silica-cemented or strongly lime-silica-cemented, stratified gravelly alluvial material; violently effervescent.

Thickness of mollic epipedon: 7 to 12 inches

Depth to duripan: 10 to 20 inches

Particle-size control section: 24 to 35 percent clay and 15 to 35 percent rock fragments

Ap horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—15 to 22 percent

Reaction—moderately acid to slightly alkaline

Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry

Texture—gravelly clay loam or gravelly loam

Content of clay—24 to 32 percent

Reaction—slightly acid to moderately alkaline

Bkq horizon and Bk horizon (where present):

Value—6 or 7 dry

Chroma—1 to 3 dry or moist

Texture—very gravelly loam, gravelly loam, or gravelly clay loam

Content of clay—24 to 32 percent

Calcium carbonate equivalent—5 to 15 percent

Reaction—slightly alkaline or moderately alkaline

2Bkqm1 horizon:

Description—indurated, lime- and silica-cemented duripan

2Bkqm2 horizon:

Description—moderately lime- and silica-cemented or strongly lime- and silica-cemented, stratified, gravelly alluvial material

Thetis Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes and glacial valleysides

Parent material: Glacial till with an influence of volcanic ash

Slope range: 25 to 65 percent

Elevation: 2,400 to 4,900 feet

Mean annual precipitation: 65 to 80 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Taxonomic classification: Ashy-skeletal, amorphic Spodic Vitricryands

Typical pedon of Thetis ashy sandy loam in Kittitas County, Washington, about 3 miles northwest of Easton; 1,450 feet south and 1,700 feet west of the northeast corner of section 29, T. 21 N., R. 13 E.; latitude 47 degrees 17 minutes 11 seconds north and longitude 121 degrees 14 minutes 18 seconds west; NAD 83.

Oe—0 to 2 inches; moderately decomposed forest litter; abrupt wavy boundary.

E—2 to 6 inches; light brownish gray (10YR 6/2) ashy sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 5 percent gravel; strongly acid (pH 5.2); abrupt wavy boundary.

Bs1—6 to 9 inches; yellowish brown (10YR 5/4) gravelly ashy sandy loam, dark yellowish brown (10YR 4/4) and dark grayish brown (10YR 4/2) moist; weak coarse granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine roots; many very fine irregular pores; few iron concretions that are dark yellowish brown (10YR 4/6) moist and are 1 to 2 millimeters in diameter; 10 percent light brownish gray (10YR 6/2) volcanic ash mixed throughout horizon; 30 percent gravel; NaF pH 11.4; strongly acid (pH 5.4); abrupt wavy boundary.

Bs2—9 to 12 inches; brown (7.5YR 4/4) gravelly ashy sandy loam, dark brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine roots; common very fine tubular pores; few iron concretions that are dark yellowish brown (10YR 4/6) moist and are 1 to 2 millimeters in diameter; 30 percent gravel; NaF pH 10.5; moderately acid (pH 5.6); abrupt wavy boundary.

Bw1—12 to 22 inches; light yellowish brown (10YR 6/4) very gravelly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine roots; common very fine tubular pores; 45 percent gravel and 5 percent cobbles; NaF pH 10.5; strongly acid (pH 5.4); clear wavy boundary.

Bw2—22 to 48 inches; light yellowish brown (10YR 6/4) very gravelly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few medium and fine roots; few fine tubular pores; 30 percent gravel and 10 percent cobbles; NaF pH 10.5; medium acid (pH 5.6); clear wavy boundary.

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2BC—48 to 60 inches; pale yellow (2.5Y 7/4) very gravelly sandy loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; very few very fine roots; many very fine irregular pores; 30 percent gravel and 10 percent cobbles; NaF pH 10.6; medium acid (pH 5.8).

Thickness of volcanic ash influence: 28 to 50 inches

Particle-size control section: Averages 5 to 15 percent clay and 35 to 60 percent rock fragments

Reaction: Strongly acid or moderately acid throughout

E horizon:

Hue—10YR or 7.5YR

Value—3 or 4 moist

Chroma—2 or 3 dry, 1 to 3 moist

Content of clay—5 to 8 percent

Bs horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 to 5 moist

Chroma—2 to 4 moist

Texture—gravelly ashy sandy loam

Content of clay—5 to 15 percent

Bw horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 moist

Texture—very gravelly ashy sandy loam, very cobbly ashy sandy loam, or extremely cobbly sandy loam

Content of clay—5 to 15 percent

2BC horizon:

Hue—10YR or 2.5Y

Value—5 to 7 dry, 4 to 6 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly sandy loam, very cobbly sandy loam, or extremely cobbly sandy loam

Content of clay—5 to 10 percent

Thiessen Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Canyon walls

Parent material: Loess and colluvium derived from basalt

Slope range: 5 to 75 percent

Elevation: 1,700 to 4,000 feet

Mean annual precipitation: 15 to 18 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 100 to 145 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Pachic Argixerolls

Typical pedon of Thiessen very cobbly loam in Kittitas County, Washington, about 13 miles northwest of Vantage; about 500 feet north and 1,300 feet west

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of the southeast corner of section 21, T. 19 N., R. 21 E.; Whiskey Dick Mountain, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 7 minutes 1 second north and longitude 120 degrees 12 minutes 1 second west; NAD 83.

- A—0 to 3 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure parting to moderate fine and medium granular; hard, friable, moderately sticky and moderately plastic; common very fine roots; many very fine irregular pores; 25 percent gravel, 30 percent cobbles, and 4 percent stones; neutral (pH 7.0); clear smooth boundary.
- Bt1—3 to 5 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; many faint stress cutans and clay films on faces of peds; 35 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- Bt2—5 to 9 inches; dark brown (7.5YR 4/2) very gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; many faint stress cutans and clay films on faces of peds; 40 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- Bt3—9 to 15 inches; dark brown (7.5YR 4/2) extremely gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; many faint stress cutans and clay films on faces of peds; 45 percent gravel and 15 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- Bt4—15 to 22 inches; dark brown (7.5YR 4/2) extremely gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; many faint continuous stress cutans and clay films on faces of peds; 65 percent gravel and 20 percent cobbles; neutral (pH 7.2); abrupt irregular boundary.
- 2R—22 inches; basalt.

Thickness of mollic epipedon: 20 to 35 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 35 to 45 percent clay and 40 to 65 percent rock fragments

A horizon:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—23 to 27 percent

Bt1 and Bt2 horizons:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly clay loam, very cobbly clay loam, or very gravelly clay

Content of clay—35 to 40 percent

Reaction—neutral or slightly alkaline

Bt3 and Bt4 horizons:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—extremely gravelly clay loam, extremely cobbly clay loam, or very cobbly clay
Content of clay—35 to 45 percent
Reaction—neutral or slightly alkaline

Timmerman Series

Depth class: Very deep

Drainage class: Somewhat excessively drained

Position on landscape: Outwash plains and terraces

Parent material: Glacial outwash and alluvium with an influence of loess in the upper part

Slope range: 3 to 15 percent

Elevation: 600 to 1,800 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Sandy, mixed, mesic Xeric Haplocambids

Typical pedon of Timmerman sandy loam in Kittitas County, Washington, about 4 miles north of Vantage; about 300 feet south and 2,100 feet east of the northwest corner of section 1, T. 17 N., R. 22 E.; Gingko, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 59 minutes 56 seconds north and longitude 120 degrees 1 minute 6 seconds west; NAD 83.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak coarse granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and few fine roots; common very fine irregular pores; neutral (pH 7.2); clear wavy boundary.

Bw1—3 to 7 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine and coarse roots; common very fine irregular pores; neutral (pH 7.2); gradual wavy boundary.

Bw2—7 to 15 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; slightly alkaline (pH 7.6); gradual wavy boundary.

Bk1—15 to 21 inches; pale brown (10YR 6/3) loamy coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; common very fine and few fine interstitial pores; 5 percent distinct coatings of calcium carbonate that are white (10YR 8/1) dry and are on undersides of rock fragments; slightly effervescent; 10 percent gravel; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—21 to 60 inches; light brownish gray (10YR 6/2) coarse sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine interstitial pores; 5 percent distinct coatings of calcium carbonate that are white (10YR 8/1) dry and are on undersides of rock fragments; slightly effervescent; 5 percent gravel; moderately alkaline (pH 8.2).

Particle-size control section: Averages 4 to 13 percent clay and 5 to 20 percent rock fragments

A horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 15 percent

Bw horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 or 3 dry or moist

Texture—sandy loam, coarse sandy loam, or fine sandy loam

Content of clay—5 to 15 percent

Reaction—neutral or slightly alkaline

Bk horizon:

Value—4 to 7 dry, 3 to 5 moist

Chroma—2 or 3 dry or moist

Texture—loamy coarse sand, coarse sand, or gravelly coarse sand

Content of clay—0 to 5 percent

Calcium carbonate equivalent—1 to 15 percent

Reaction—slightly alkaline or strongly alkaline

Umtanum Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Terraces and alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 5 percent

Elevation: 1,500 to 2,000 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Umtanum ashy silt loam in Kittitas County, Washington, about 1.5 miles south of Thorp; about 700 feet east and 150 feet north of the southwest corner of section 14, T. 18 N., R. 17 E.; Thorp, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 2 minutes 38 seconds north and longitude 120 degrees 41 minutes 4 seconds west; NAD 83.

Ap—0 to 9 inches; very dark gray (10YR 3/1) ashy silt loam, black (10YR 2/1) moist; weak fine granular structure; slightly hard, firm, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; NaF pH 8.5; neutral (pH 6.8); abrupt smooth boundary.

2BA—9 to 16 inches; very dark gray (10YR 3/1) silty clay loam, black (10YR 2/1) moist; weak medium prismatic structure; hard, firm, moderately sticky and moderately plastic; many very fine and common fine and medium roots; common very fine tubular pores; NaF pH 8.5; neutral (pH 6.8); abrupt smooth boundary.

2Bt1—16 to 19 inches; very dark gray (10YR 3/1) silty clay loam, black (10YR 2/1) moist; moderate medium prismatic structure; very hard, very firm, moderately sticky and moderately plastic; few fine and medium roots; few very fine and common medium irregular and tubular pores; few faint clay films lining pores and on faces of peds; neutral (pH 6.8); abrupt wavy boundary.

2Bt2—19 to 32 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few very fine irregular pores; few faint clay films lining pores and on faces of peds; neutral (pH 6.8); clear wavy boundary.

2Bt3—32 to 42 inches; grayish brown (10YR 5/2) silty clay loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure; very hard, very firm,

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moderately sticky and moderately plastic; few very fine roots; few very fine pores; few faint clay films lining pores and on faces of peds; few coarse dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral (pH 6.8); clear wavy boundary.

2Bt4—42 to 48 inches; grayish brown (10YR 5/2) silty clay loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure; very hard, very firm, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; common prominent brownish yellow (10YR 6/6) iron accumulations; common distinct clay films lining pores and on faces of peds; common coarse dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral (pH 6.8); clear wavy boundary.

2Bt5—48 to 60 inches; grayish brown (10YR 5/2) silty clay loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure; very hard, very firm, slightly sticky and slightly plastic; common prominent brownish yellow (10YR 6/6) iron accumulations; few very fine roots; few very fine irregular pores; patchy distinct clay films lining pores and on faces of peds; common coarse dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral (pH 6.8).

Thickness of mollic epipedon: More than 60 inches

Thickness of volcanic ash influence: 7 to 12 inches

Irrigation-induced water table: Present some time during irrigation season

Particle-size control section: Averages 35 to 45 percent clay

Ap horizon:

Value—2 or 3 dry or moist

Chroma—1 or 2 dry or moist

Content of clay—20 to 25 percent

Reaction—slightly acid or neutral

2BA horizon

Value—2 or 3 dry or moist

Chroma—1 or 2 dry or moist

Texture—silty clay loam or silt loam

Content of clay—25 to 33 percent

2Bt1 horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Texture—clay, clay loam, or silty clay loam

Content of clay—35 to 45 percent

2Bt2, 2Bt3, 2Bt4, and 2Bt5 horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—clay, silty clay loam, or clay loam

Content of clay—27 to 45 percent

Vabus Series

Depth class: Moderately deep to dense glacial till

Drainage class: Moderately well drained

Position on landscape: Mountain slopes and glacial trough valleys

Parent material: Glacial till with an admixture of volcanic ash

Slope range: 0 to 70 percent

Elevation: 2,500 to 5,700 feet

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Mean annual precipitation: 55 to 90 inches

Mean annual air temperature: 39 to 42 degrees F

Frost-free period: 40 to 85 days

Taxonomic classification: Ashy-skeletal, amorphic Andic Haplocryods

Typical pedon of Vabus ashy sandy loam in Kittitas County, Washington, about 6 miles southeast of Snoqualmie Pass; 1,150 feet west and 1,920 feet south of the northeast corner of section 26, T. 22 N., R. 12 E.; latitude 47 degrees 22 minutes 7 seconds north and longitude 121 degrees 21 minutes 51 seconds west; NAD 83.

Oe—0 to 4 inches; moderately decomposed forest litter; abrupt wavy boundary.

E—4 to 7 inches; light gray (10YR 6/1) ashy sandy loam, gray (10YR 5/1) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; few very fine irregular pores; 5 percent gravel; very strongly acid (pH 4.6); abrupt wavy boundary.

Bs1—7 to 13 inches; strong brown (7.5YR 5/6) ashy sandy loam, dark reddish brown (5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine roots; few very fine tubular pores; 10 percent gravel; NaF pH 12.0; very strongly acid (pH 4.6); clear wavy boundary.

Bs2—13 to 18 inches; light yellowish brown (10YR 6/4) very gravelly ashy sandy loam, dark yellowish brown (10YR 3/6) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few fine and coarse roots; few very fine tubular pores; 35 percent gravel; NaF pH 12.0; very strongly acid (pH 4.8); clear wavy boundary.

BC—18 to 24 inches; light yellowish brown (2.5Y 6/4) very gravelly ashy sandy loam, olive brown (2.5Y 4/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine roots; few very fine irregular pores; 35 percent gravel and 5 percent cobbles; NaF pH 12.0; very strongly acid (pH 5.0); clear wavy boundary.

CB—24 to 35 inches; light yellowish brown (2.5Y 6/4) very gravelly ashy sandy loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine roots; few very fine irregular pores; many strong brown (7.5YR 4/6) coatings on peds; 55 percent gravel and 5 percent cobbles; NaF pH 12.0; very strongly acid (pH 5.0); abrupt smooth boundary.

2Cd—35 to 60 inches; light gray (5Y 7/2), dense, compact glacial till that breaks to very gravelly loamy sand, olive gray (5Y 4/2) moist; common medium distinct redoximorphic concentrations that are yellow (10YR 7/6) and brownish yellow (10YR 6/6) moist; 45 percent gravel and 10 percent cobbles; NaF pH 10.5; very strongly acid (pH 5.0).

Thickness of volcanic ash influence: 20 to 40 inches

Depth to dense glacial till: 20 to 40 inches

Perched water table: Present some time during the year

Particle-size control section: Averages 5 to 15 percent clay and 35 to 70 percent rock fragments

E horizon:

Value—6 or 7 dry, 4 to 6 moist

Chroma—1 or 2 dry or moist

Texture—ashy sandy loam, stony ashy sandy loam, or very stony ashy sandy loam

Content of clay—5 to 8 percent

Reaction—extremely acid to moderately acid

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Bs1 horizon:

Hue—5YR or 7.5YR

Value—4 to 6 dry, 3 to 5 moist

Chroma—4 to 6 dry or moist

Content of clay—5 to 10 percent

Reaction—extremely acid to moderately acid

Bs2 horizon:

Hue—7.5YR or 10YR

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 to 6 dry or moist

Texture—very gravelly ashy sandy loam, very gravelly ashy loam, or very cobbly ashy loam

Content of clay—5 to 10 percent

Reaction—very strongly acid or moderately acid

BC and CB horizons:

Hue—10YR, 2.5Y, or 7.5YR

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 to 6 dry or moist

Texture—very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, or extremely cobbly ashy sandy loam

Content of clay—5 to 15 percent

Reaction—very strongly acid or moderately acid

2Cd horizon:

Hue—5Y or 2.5Y

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, or extremely gravelly sandy loam

Content of clay—5 to 15 percent

Reaction—very strongly acid or moderately acid

Vanderbilt Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Outwash terraces and alluvial fans

Parent material: Alluvium with an influence of volcanic ash in the upper part

Slope range: 0 to 2 percent

Elevation: 1,400 to 2,400 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Vanderbilt ashy loam in Kittitas County, Washington, about 2.5 miles northwest of Ellensburg; about 725 feet south and 1,700 feet west of the northeast corner of section 32, T. 18 N., R. 18 E.; latitude 47 degrees 0 minutes 44 seconds north and longitude 120 degrees 35 minutes 32 seconds west; NAD 83.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few

coarse roots; common very fine tubular pores; NaF pH 8.6; neutral (pH 6.9); abrupt smooth boundary.

A1—8 to 15 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few coarse roots; common very fine and fine tubular pores; NaF pH 8.6; neutral (pH 6.9); clear wavy boundary.

A2—15 to 28 inches; brown (10YR 4/3) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; hard, friable, slightly sticky and slightly plastic; common very fine and few coarse roots; few fine and very fine irregular and common fine and few coarse tubular pores; NaF pH 8.6; neutral (pH 6.9); clear wavy boundary.

2Bt1—28 to 38 inches; brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; many faint clay films lining pores and on faces of peds; NaF pH 9.0; neutral (pH 6.9); clear wavy boundary.

2Bt2—38 to 51 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and coarse tubular pores; many faint clay films lining pores and on faces of peds; NaF pH 8.8; neutral (pH 6.9); clear wavy boundary.

2Bt3—51 to 60 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine pores; many faint clay films lining pores and on faces of peds; NaF pH 8.0; neutral (pH 6.9).

Thickness of mollic epipedon: More than 60 inches

Thickness of volcanic ash influence: 16 to 30 inches

Particle-size control section: 27 to 32 percent clay

Irrigation-induced water table: Present some time during the year in some pedons

Ap and A horizons:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—20 to 24 percent

Reaction—slightly acid or neutral

Bt horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—27 to 32 percent

Vanepps Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains

Parent material: Residuum and colluvium derived from serpentine with a mantle of volcanic ash

Slope range: 25 to 50 percent

Elevation: 4,000 to 7,200 feet

Mean annual precipitation: 65 to 85 inches

Mean annual air temperature: 38 to 40 degrees F

Frost-free period: 40 to 85 days

Taxonomic classification: Loamy-skeletal, magnesian Andic Dystrocrypts

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Typical pedon of Vanepps gravelly ashy sandy loam in Kittitas County, Washington, about 0.25 mile southwest of Gallagher Head Lake; 1,500 feet east and 2,700 feet north of the southwest corner of section 33, T. 23 N., R. 15 E.; latitude 47 degrees 26 minutes 24 seconds north and longitude 120 degrees 59 minutes 3 seconds west; NAD 83.

Oe—0 to 1 inch; moderately decomposed forest litter; abrupt wavy boundary.

A—1 to 9 inches; grayish brown (10YR 5/2) gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 20 percent gravel, 10 percent cobbles, and 0.1 percent surface stones; Na F pH 9.8; slightly acid (pH 6.4); abrupt wavy boundary.

Bw—9 to 29 inches; olive (5Y 5/3) very cobbly loam, dark olive gray (5Y 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 30 percent gravel and 20 percent cobbles; NaF pH 9.8; slightly acid (pH 6.4); abrupt wavy boundary.

2Cr—29 inches; weathered serpentine breaking to gray (5Y 5/1) and olive gray (5Y 5/2) very cobbly loam, dark gray (5Y 4/1) moist; massive; very hard, very firm, nonsticky and nonplastic; 25 percent hard gravel and 25 percent hard cobbles; NaF pH 9.2; slightly acid (pH 6.4).

Thickness of volcanic ash influence: 7 to 10 inches

Depth to paralithic contact: 20 to 40 inches

Particle-size control section: 5 to 15 percent clay and 35 to 60 percent rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—5 to 10 percent

Bw horizon:

Hue—10YR, 5Y, or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry, 2 to 4 moist

Texture—very cobbly loam, very cobbly sandy loam, or extremely cobbly loam

Content of clay—5 to 15 percent

Vantage Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Basalt plateaus, structural benches, and hillslopes

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 3 to 70 percent

Elevation: 700 to 3,800 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Lithic Argixerolls

Typical pedon of Vantage very cobbly loam in Kittitas County, Washington; about 2.5 miles east of Roza Dam; 800 feet east and 1,200 feet north of the southwest corner of section 35, T. 15 N., R. 19 E.; Pomona, Washington, U.S. Geological Survey

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topographic quadrangle; latitude 46 degrees 44 minutes 28 seconds north and longitude 120 degrees 25 minutes 10 seconds west; NAD 83.

- A—0 to 5 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate coarse granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine and common medium roots; few very fine tubular pores; 20 percent gravel and 30 percent cobbles; neutral (pH 7.0); clear wavy boundary.
- BAt—5 to 8 inches; brown (10YR 4/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; many very fine and common medium roots; many very fine tubular pores; common distinct clay films on faces of peds; 20 percent gravel and 20 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.
- Bt—8 to 15 inches; brown (10YR 4/3) very cobbly clay, dark yellowish brown (10YR 3/4) moist; strong coarse prismatic structure; very hard, very firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; continuous prominent clay films on faces of peds and lining pores; many thick clay films on rock fragments; 20 percent gravel and 30 percent cobbles; neutral (pH 7.2); clear wavy boundary.
- Btq—15 to 18 inches; dark yellowish brown (10YR 4/4) extremely cobbly clay, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; common very fine roots; many distinct clay films on faces of peds and many moderately thick clay films on rock fragments; 20 percent gravel, 30 percent cobbles, and 10 percent stones; discontinuous coatings of silica on undersides of 20 percent of total rock fragments; neutral (pH 7.2); abrupt wavy boundary.
- 2R—18 inches; fractured basalt with coatings of silica on 30 percent of total surface area.

Thickness of mollic epipedon: 7 to 10 inches

Depth to bedrock: 11 to 20 inches

Particle-size control section: 35 to 60 percent clay and 40 to 80 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very cobbly loam or very stony loam

Content of clay—20 to 25 percent

BAt horizon:

Value—4 or 5 dry

Texture—very cobbly clay loam, very gravelly loam, or very gravelly clay loam

Content of clay—25 to 40 percent

Bt and Btq horizons:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly clay, extremely cobbly clay, or extremely gravelly clay

Content of clay—45 to 65 percent

Varodale Series

Depth class: Very deep

Drainage class: Moderately well drained

Position on landscape: Terraces and alluvial fans

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Parent material: Alluvium with a minor influence of volcanic ash

Slope range: 0 to 5 percent

Elevation: 1,500 to 2,500 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 110 to 140 days

Taxonomic classification: Fine, smectitic, mesic Aquic Haploxererts

Typical pedon of Varodale clay ([fig. 5](#)) in Kittitas County, Washington, about 3 miles west of Thorp; about 1,900 feet east and 1,900 feet south of the northwest corner of section 9, T. 18 N. R. 17 E.; Thorp, Washington, U.S. Geological Survey topographic quadrangle; latitude 47 degrees 4 minutes 2 seconds north and longitude 120 degrees 43 minutes 20 seconds west; NAD 83.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) clay, black (10YR 2/1) moist; strong coarse granular structure; very hard, firm, moderately sticky and very plastic; many very fine roots; common very fine irregular pores; 0.75- to 1.00-inch vertical cracks; 5 percent gravel; NaF pH 8.6; neutral (pH 6.8); gradual wavy boundary.

A—8 to 22 inches; dark grayish brown (10YR 4/2) clay, black (10YR 2/1) moist; strong coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, very firm, moderately sticky and very plastic; common very fine roots; common very fine irregular and tubular pores; 0.50- to 0.75-inch vertical cracks; 5 percent gravel; NaF pH 8.6; neutral (pH 7.0); gradual irregular boundary.

Bss1—22 to 38 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; extremely hard, very firm, moderately sticky and very plastic; few very fine roots; few very fine irregular and tubular pores; many distinct intersecting slickensides; 0.25- to 0.50-inch vertical cracks; common prominent coatings that are black (10YR 2/1) moist and are on faces of peds; 5 percent gravel; NaF pH 8.6; neutral (pH 7.0); clear wavy boundary.

Bss2—38 to 44 inches; grayish brown (10YR 5/2) clay, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular and tubular pores; many distinct intersecting slickensides; few prominent coatings that are black (10YR 2/1) moist and are on faces of peds; 5 percent gravel; NaF pH 8.6; neutral (pH 7.2); clear wavy boundary.

2Bss3—44 to 60 inches; light brownish gray (10YR 6/2) sandy clay, dark grayish brown (10YR 4/2) moist; moderate coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; few distinct yellowish brown (10YR 5/6) iron stains on faces of peds; many distinct intersecting slickensides; few distinct patchy very dark brown (10YR 2/2) coatings on faces of peds; 10 percent gravel; NaF pH 8.6; neutral (pH 7.0).

Irrigation-induced water table: Present some time during the irrigation season

Particle-size control section: 45 to 60 percent clay and 0 to 10 percent rock fragments

Ap and A horizons:

Value—3 or 4 dry

Chroma—1 or 2 dry

Content of clay—45 to 60 percent

Bss horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—45 to 60 percent

2Bss3 horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—sandy clay, clay, or gravelly sandy clay

Content of clay—45 to 60 percent

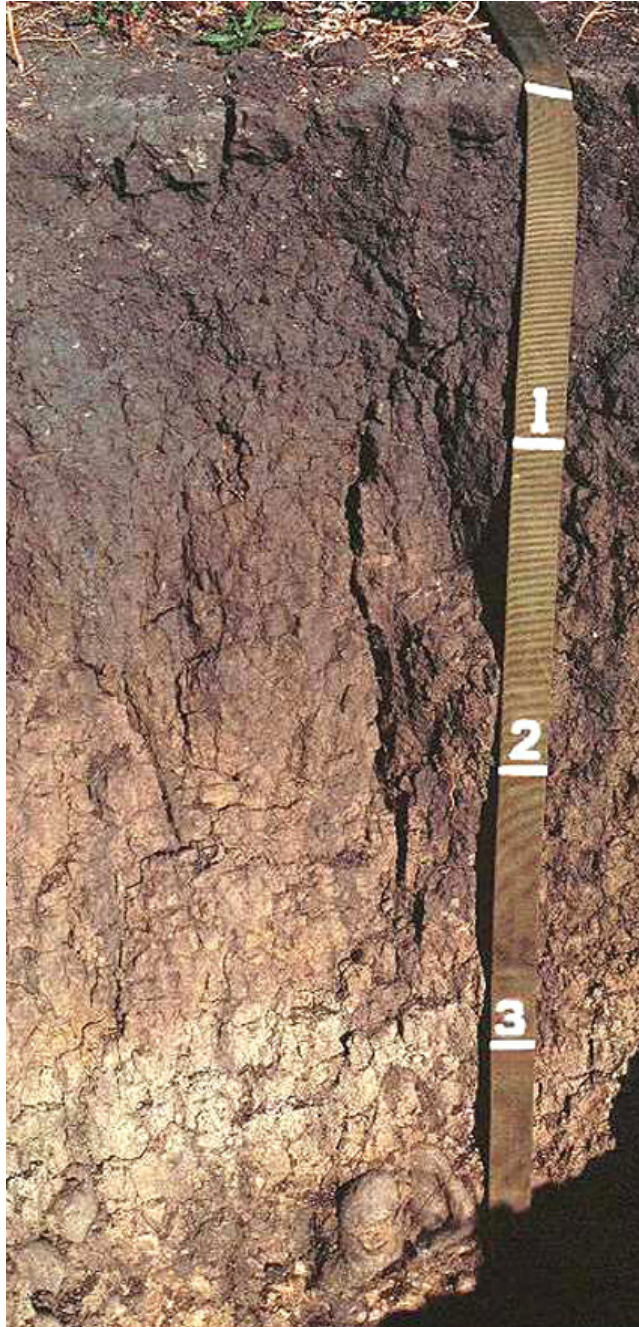


Figure 5.—Typical profile of Varodale clay. Note vertical cracks due to presence of heavy clay between depths of 8 and 38 inches. Scale is in feet.

Vitricryands

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Summits, shoulders, and backslopes of mountains

Parent material: Colluvium derived from basalt mixed with volcanic ash

Slope range: 30 to 70 percent

Elevation: 4,000 to 6,000 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 39 to 41 degrees F

Frost-free period: 30 to 60 days

Taxonomic classification: Vitricryands

Typical pedon of Vitricryands very gravelly ashy sandy loam in Kittitas County, Washington; about 1,190 feet east and 1,590 feet south of the northwest corner of section 8, T. 21 N., R. 15 E.; latitude 47 degrees 19 minutes 42 seconds north and longitude 120 degrees 59 minutes 32 seconds west; NAD 83.

O—0 to 1 inch; moderately decomposed needles and twigs; abrupt smooth boundary.

A1—1 to 2 inches; light yellowish gray (10YR 6/2) very gravelly ashy sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; nonsticky and nonplastic; weakly smeary; common fine and medium and few coarse roots; few very fine tubular pores; 30 percent gravel and 10 percent cobbles; medium acid (pH 5.8); clear wavy boundary.

A2—1 to 9 inches; yellowish brown (10YR 5/4) very gravelly ashy sandy loam, dark yellowish brown (10YR 3/4) moist; weak very fine subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium and few coarse roots; few very fine tubular pores; 30 percent gravel and 10 percent cobbles; medium acid (pH 5.8); abrupt wavy boundary.

Bw1—9 to 27 inches; brown (7.5YR 5/4) extremely gravelly ashy loam, dark brown (7.5YR 3/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common fine and medium roots; few fine tubular pores; 50 percent gravel and 30 percent cobbles; medium acid (pH 5.8); clear wavy boundary.

Bw2—27 to 37 inches; yellowish brown (10YR 5/4) extremely gravelly ashy loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; few very fine tubular pores; 65 percent gravel and 25 percent cobbles; abrupt smooth boundary.

2R—37 inches; basalt.

Thickness of volcanic ash influence: Entire soil profile

Depth to bedrock: 20 to 40 inches

Particle-size control section: 5 to 15 percent clay and 20 to 85 percent rock fragments

Reaction: Strongly acid or moderately acid

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—very gravelly ashy loam

Content of clay—5 to 10 percent

Bw horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—gravelly ashy loam, extremely cobbly ashy loam, or very gravelly ashy sandy loam

Content of clay—5 to 15 percent

Volinger Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Hillslopes and dissected plateaus

Parent material: Colluvium with an influence of loess and volcanic ash in the upper part

Slope range: 5 to 30 percent

Elevation: 1,300 to 2,800 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Volinger ashy silt loam in Kittitas County, Washington, about 7.5 miles south of Ellensburg; about 2,200 feet west and 100 feet north of the southeast corner of section 5, T. 16 N., R. 18 E.; Ellensburg South, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 53 minutes 55 seconds north and longitude 120 degrees 36 minutes 7 seconds west; NAD 83.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) ashy silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common very fine tubular pores; neutral (pH 7.0); abrupt smooth boundary.

A—5 to 14 inches; dark grayish brown (10YR 4/2) ashy silt loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common very fine tubular pores; 5 percent very coarse cylindrical cicada casts; neutral (pH 7.2); clear wavy boundary.

AB—14 to 17 inches; brown (10YR 5/3) ashy silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common very fine tubular pores; 5 percent very coarse cylindrical cicada casts; neutral (pH 7.0); abrupt wavy boundary.

2Bt1—17 to 27 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; strong fine and medium angular blocky structure; very hard, firm, slightly sticky and moderately plastic; many very fine roots in vertical seams and in rodent casts, common very fine roots between peds, and few very fine roots in peds; common very fine tubular and irregular pores; common distinct pressure faces on peds and few faint clay bridges in pores; 90 percent very coarse intersecting cylindrical cicada casts; neutral (pH 7.0); clear wavy boundary.

2Bt2—27 to 39 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine and medium angular blocky structure; very hard, firm, slightly sticky and moderately plastic; many very fine roots in vertical seams and rodent casts, common very fine roots between peds, and few very fine roots in peds; common very fine tubular and irregular pores; common distinct pressure faces on peds

and few faint clay bridges in pores; 35 percent very coarse intersecting cylindrical cicada casts; slightly alkaline (pH 7.4); abrupt wavy boundary.

2Bwb—39 to 50 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common very fine tubular pores; common vertical areas 4 to 7 inches in diameter compacted by cicadas; slightly alkaline (pH 7.4); abrupt wavy boundary.

2Btb—50 to 58 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine irregular and common very fine tubular pores; few faint pressure faces on peds and few faint clay bridges in pores; slightly alkaline (pH 7.6); clear wavy boundary.

2Btkb—58 to 60 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; many very fine irregular and common very fine tubular pores; few distinct coatings of lime in pores and very few faint coatings of lime on upper surface of peds; few faint pressure faces on peds and few faint clay bridges in pores; slightly effervescent; moderately alkaline (pH 8.2).

Thickness of mollic epipedon: 20 to 40 inches

Thickness of volcanic ash influence: 12 to 19 inches

Depth to secondary carbonates: 43 to 60 inches

Particle-size control section: 27 to 33 percent clay and 0 to 2 percent rock fragments

Ap and A horizons:

Texture—ashy loam or ashy silt loam

Content of clay—15 to 20 percent

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—ashy loam or ashy silt loam

Content of clay—15 to 25 percent

2Bt horizon:

Value—4 or 5 dry

Texture—clay loam or silty clay loam

Content of clay—27 to 33 percent

Reaction—neutral or slightly alkaline

2Bwb horizon:

Value—4 or 5 dry

Texture—loam or silt loam

Content of clay—18 to 27 percent

Reaction—neutral or slightly alkaline

2Btb horizon:

Value—4 or 5 dry

Chroma—3 or 4 dry or moist

Texture—loam, silt loam, or silty clay loam

Content of clay—18 to 30 percent

Reaction—neutral or slightly alkaline

2Btkb horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—loam, silt loam, or silty clay loam

Content of clay—18 to 30 percent

Calcium carbonate equivalent—5 to 15 percent

Volperie Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Backslopes, shoulders, and summits of mountains

Parent material: Residuum derived from phyllite and schist with a mantle of volcanic ash

Slope range: 5 to 60 percent

Elevation: 2,200 to 4,100 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Taxonomic classification: Coarse-loamy, isotic, frigid Andic Dystroxerepts

Typical pedon of Volperie very paragravelly ashy sandy loam in Kittitas County, Washington, about 5 miles south of Cle Elum; 2,000 feet south and 2,100 feet east of the northwest corner of section 22, T. 19 N. R. 15 E.; Frost Mountain, Washington, U.S. Geological Survey quadrangle; latitude 47 degrees 7 minutes 31 seconds north and longitude 120 degrees 57 minutes 18 seconds west; NAD 83.

Oi—0 to 1 inch; slightly decomposed forest litter.

A—1 to 8 inches; pale brown (10YR 6/3) very paragravelly ashy sandy loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine irregular pores; 10 percent angular quartz gravel and 30 percent phyllite and schist pararock fragments; NaF pH 10.5; moderately acid (pH 5.8); clear wavy boundary.

2Bw—8 to 16 inches; yellowish brown (10YR 5/4) very paragravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine irregular pores; 10 percent angular quartz gravel and 30 percent phyllite and schist pararock fragments; NaF pH 10.5; moderately acid (pH 5.8); clear wavy boundary.

2C—16 to 38 inches; light yellowish brown (2.5Y 6/4) extremely paragravelly loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine irregular pores; 25 percent angular quartz gravel, 5 percent angular quartz cobbles, and 50 percent phyllite and schist pararock fragments; NaF pH 9.4; moderately acid (pH 5.8); abrupt wavy boundary.

Cr—38 inches; bedded phyllite and mica schist.

Thickness of volcanic ash influence: 7 to 13 inches

*Depth to a paralithic contact—*30 to 40 inches

Particle-size control section: 5 to 15 percent clay, 5 to 30 percent rock fragments, and 25 to 50 percent pararock fragments

Reaction: Moderately acid or slightly acid throughout

A horizon:

Value—5 or 6 dry

Chroma—2 or 3 moist

Content of clay—5 to 10 percent

2Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very paragravelly loam, gravelly sandy loam, or paragravelly sandy loam

Content of clay—5 to 15 percent

2C horizon:

Hue—10YR or 2.5Y

Value—2 to 4 dry, 3 or 4 moist

Chroma—3 or 4 moist

Texture—gravelly loam, very paragravelly sandy loam, extremely paragravelly loam, or gravelly sandy loam

Content of clay—5 to 15 percent

Weirman Series

Depth class: Very deep

Drainage class: Somewhat excessively drained and moderately well drained

Position on landscape: Flood plains and terraces

Parent material: Alluvium

Slope range: 0 to 5 percent

Elevation: 400 to 3,300 feet

Mean annual precipitation: 6 to 15 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 130 to 195 days

Taxonomic classification: Sandy-skeletal, mixed, mesic Torrifluventic
Haploxerolls

Typical pedon of Weirman very gravelly sandy loam in Kittitas County, Washington; about 1,600 feet east and 850 feet south of the northwest corner of section 31, T. 17 N., R. 19 E.; latitude 46 degrees 55 minutes 57 seconds north and longitude 120 degrees 30 minutes 36 seconds west; NAD 83.

A—0 to 5 inches; dark brown (10YR 4/3) very gravelly sandy loam, very dark brown (10YR 2/2) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; many fine roots; 35 percent gravel and 5 percent cobbles; slightly alkaline (pH 7.4); gradual wavy boundary.

AC—5 to 15 inches; brown (10YR 5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grain; loose; many very fine and fine roots; 40 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.6); gradual wavy boundary.

2C1—15 to 42 inches; brown (10YR 5/3) extremely gravelly sand, dark brown (10YR 3/3) moist; single grain; loose; many very fine and fine roots; 50 percent gravel and 20 percent cobbles; slightly alkaline (pH 7.6); gradual wavy boundary.

2C2—42 to 60 inches; brown (10YR 5/3) extremely gravelly loamy sand, dark brown (10YR 3/3) moist; single grain; loose; few fine roots; 65 percent gravel and 25 percent cobbles; neutral (pH 6.8).

Thickness of mollic epipedon: 10 to 20 inches

Irrigation-induced water table: Present some time during the irrigation season in some areas

Particle-size control section: Averages 0 to 5 percent clay and 35 to 60 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—gravelly sandy loam, very cobbly sandy loam, or very gravelly sandy loam

Content of clay—5 to 8 percent

AC horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Content of clay—2 to 5 percent

2C horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand, or very gravelly sand

Content of clay—0 to 2 percent

Whiskeydick Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Hillslopes, plateaus, and structural benches

Parent material: Residuum and colluvium derived from basalt with a minor amount of loess

Slope range: 0 to 65 percent

Elevation: 1,200 to 4,200 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 160 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Typic Palexerolls

Typical pedon of Whiskeydick very cobbly loam in Kittitas County, Washington; about 9 miles east of Kittitas, between Interstate Highway 90 and the old Vantage Highway; 2,400 feet east and 300 feet north of the southwest corner of section 16, T. 17 N., R. 21 E.; Boyleston, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 57 minutes 28 seconds north and longitude 120 degrees 12 minutes 30 seconds west; NAD 83.

A—0 to 5 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 20 percent gravel and 20 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.

Bt1—5 to 10 inches; dark brown (10YR 4/3) very cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and medium roots; common very fine irregular pores; many distinct clay films on faces of peds and lining pores; 15 percent gravel and 25 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.

Bt2—10 to 18 inches; dark brown (10YR 4/3) very cobbly clay, dark brown (10YR 3/3) moist; strong medium prismatic structure; very hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine irregular pores; continuous prominent clay films on faces of peds and lining pores; 20 percent gravel and 20 percent cobbles; neutral (pH 6.8); clear wavy boundary.

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Bt3—18 to 27 inches; yellowish brown (10YR 5/4) extremely cobbly clay, dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common very fine roots; many prominent clay films on faces of peds; 40 percent gravel and 25 percent cobbles; neutral (pH 6.8).

R—27 inches; fractured basalt; coatings of silica in fractures.

Thickness of mollic epipedon: 12 to 19 inches

Depth to bedrock: 20 to 40 inches

Particle-size control section: 38 to 55 percent clay and 35 to 70 percent rock fragments

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—17 to 23 percent

Bt1 horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Texture—very cobbly clay loam, very gravelly clay loam, or very cobbly clay

Content of clay—38 to 50 percent

Bt2 and Bt3 horizons:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly clay, very cobbly clay, or extremely cobbly clay

Content of clay—45 to 55 percent

Reaction—neutral or slightly alkaline

Winchester Series

Depth class: Very deep

Drainage class: Excessively drained

Position on landscape: Terraces, dunes, and terrace escarpments

Parent material: Alluvial, eolian, or glacial outwash

Slope range: 5 to 60 percent

Elevation: 500 to 1,300 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 135 to 195 days

Taxonomic classification: Mixed, mesic Xeric Torripsamments

Typical pedon of Winchester sand in Kittitas County, Washington, about 1 mile south of Scammon Landing along the Columbia River; about 610 feet east and 1,020 feet south of the northwest corner of section 25, T. 18 N., R. 22 E., latitude 47 degrees 1 minute 36 seconds north and longitude 120 degrees 1 minute 30 seconds west; NAD 83.

A—0 to 9 inches; grayish brown (10YR 5/2) sand, very dark grayish brown (10YR 3/2) moist; single grain; loose; few roots; slightly alkaline (pH 7.8); diffuse smooth boundary.

C1—9 to 15 inches; dark gray (10YR 4/1) coarse sand, black (10YR 2/1) moist; single grain; loose; few roots; moderately alkaline (pH 8.0); gradual wavy boundary.

C2—15 to 60 inches; gray (10YR 5/1) coarse sand, very dark gray (10YR 3/1) moist; single grain; loose; few roots; few lenses of lime 0.50 to 0.75 inch thick; slightly effervescent; moderately alkaline (pH 8.3).

Particle-size control section: 0 to 5 percent clay and 0 to 10 percent rock fragments

A horizon:

Value—4 to 6 dry

Chroma—1 to 4 dry or moist

Content of clay—0 to 5 percent

Reaction—neutral or slightly alkaline

C horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Texture—coarse sand, loamy coarse sand, or sand

Content of clay—0 to 5 percent

Calcium carbonate equivalent—0 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Windry Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Hillslopes

Parent material: Residuum and colluvium derived from basalt with loess in the upper part

Slope range: 45 to 60 percent

Elevation: 2,500 to 3,000 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Argixerolls

Typical pedon of Windry very cobbly loam in Yakima County, Washington; about 2,350 feet south and 2,500 feet west of the northeast corner of section 30, T. 14 N., R. 22 E.; Black Rock Spring NE, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 40 minutes 21 seconds north and longitude 120 degrees 6 minutes 55 seconds west; NAD 83.

A—0 to 3 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; common very fine irregular pores; 20 percent gravel and 30 percent cobbles; neutral (pH 7.2); clear wavy boundary.

AB—3 to 7 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; common very fine irregular pores; common distinct (10YR 3/2) organic coatings on faces of peds; 45 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt—7 to 15 inches; brown (10YR 5/3) extremely cobbly clay loam, dark brown (10YR 3/3) moist; weak medium and fine subangular blocky structure; slightly hard, very firm, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine tubular pores; common distinct clay films on faces of peds; 30 percent gravel and 40 percent cobbles; slightly alkaline (pH 7.2); clear wavy boundary.

R—15 inches; basalt.

Thickness of mollic epipedon: 12 to 20 inches

Depth to bedrock: 14 to 20 inches

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Particle-size control section: 25 to 30 percent clay and 35 to 70 percent rock fragments

Reaction: Neutral or slightly alkaline throughout

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 25 percent

AB horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Texture—very gravelly clay loam, very gravelly loam, or very cobbly loam

Content of clay—15 to 27 percent

Bt horizon:

Value—4 to 6 dry or moist

Chroma—2 or 3 dry or moist

Texture—extremely gravelly clay loam, extremely cobbly clay loam, or very cobbly loam

Content of clay—20 to 30 percent

Wipple Series

Depth class: Deep and very deep

Drainage class: Well drained

Position on landscape: Hillslopes and structural benches

Parent material: Colluvium derived from basalt with a minor amount of loess in the upper part

Slope range: 15 to 45 percent

Elevation: 1,200 to 3,200 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 170 days

Taxonomic classification: Clayey-skeletal, smectitic, mesic Aridic Palexerolls

Typical pedon of Wipple cobbly clay loam in Kittitas County, Washington, about 2 miles east of the confluence of Roza Creek and the Yakima River; 300 feet west and 200 feet north of the southeast corner of section 14, T. 15 N., R. 19 E.; Wymer, Washinton, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 46 minutes 54 seconds north and longitude 120 degrees 24 minutes 12 seconds west; NAD 83.

A—0 to 7 inches; brown (10YR 5/3) cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; 25 percent cobbles and 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

BA—7 to 11 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 30 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.5); abrupt smooth boundary.

Bt1—11 to 15 inches; dark yellowish brown (10YR 4/4) very gravelly clay, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure; very hard, very firm, moderately sticky and very plastic; common very fine and fine roots; few

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very fine irregular pores; many prominent clay films on faces of peds;
30 percent gravel and 10 percent cobbles; slightly alkaline (pH 7.5); clear wavy
boundary.

Bt2—15 to 30 inches; brown (7.5YR 4/4) very cobbly clay, dark brown (7.5YR 3/4)
moist; strong coarse prismatic structure; very hard, very firm, moderately sticky
and very plastic; common very fine roots; continuous prominent clay films on faces
of peds; 30 percent gravel and 25 percent cobbles; moderately alkaline (pH 8.0);
clear wavy boundary.

Btk1—30 to 45 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark
yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure;
slightly hard, friable, slightly sticky and slightly plastic; many very fine tubular
pores; common faint clay films on faces of peds; slightly effervescent; lime
segregated in common fine irregular filaments; 20 percent gravel and 30 percent
cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

Btk2—45 to 50 inches; yellowish brown (10YR 5/4) extremely cobbly clay loam, dark
yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft,
very friable, slightly sticky and slightly plastic; few faint clay films on faces of
peds; strongly effervescent with disseminated lime and coatings of lime on rock
fragments; 20 percent gravel and 40 percent cobbles; moderately alkaline (pH
8.0); abrupt smooth boundary.

R—50 inches; basalt.

Thickness of mollic epipedon: 10 to 15 inches

Depth to bedrock: 40 to 60 inches or more

Particle-size control section: Averages 45 to 60 percent clay and 40 to 60 percent
rock fragments

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Content of clay—27 to 35 percent

BA horizon:

Value—4 or 5 dry

Chroma—3 or 4 dry

Texture—very gravelly clay loam or very cobbly clay loam

Content of clay—30 to 40 percent

Reaction—neutral or slightly alkaline

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly clay, very cobbly clay, or extremely cobbly clay

Content of clay—50 to 60 percent

Calcium carbonate equivalent—0 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Btk horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly clay, very cobbly clay loam, or extremely cobbly clay loam

Content of clay—32 to 60 percent

Calcium carbonate equivalent—1 to 5 percent

Reaction—slightly alkaline or moderately alkaline

Wockum Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: North-facing hillslopes and canyons

Parent material: Colluvium derived from basalt with an influence of loess and volcanic ash in the upper part

Slope range: 15 to 60 percent

Elevation: 1,700 to 3,600 feet

Mean annual precipitation: 12 to 15 percent

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls

Typical pedon of Wockum ashy silt loam in Kittitas County, Washington, about 6 miles southwest of Kittitas; about 500 feet south and 100 feet west of the northeast corner of section 7, T. 16 N., R. 19 E.; Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 53 minutes 48 seconds north and longitude 120 degrees 29 minutes 18 seconds west; NAD 83.

A1—0 to 5 inches; brown (10YR 4/3) ashy silt loam, very dark brown (10YR 2/2) moist; moderate medium and fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine roots; common fine irregular pores; 5 percent gravel and 1 percent cobbles; neutral (pH 7.0); clear smooth boundary.

A2—5 to 10 inches; brown (10YR 4/3) ashy silt loam, very dark brown (10YR 2/2) moist; moderate fine, medium, and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; common fine irregular pores; 5 percent gravel and 1 percent cobbles; neutral (pH 7.0); clear wavy boundary.

AB—10 to 17 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium and fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium roots; common fine and very fine tubular pores; 10 percent gravel and 1 percent cobbles; neutral (pH 7.0); clear wavy boundary.

2Bt1—17 to 27 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure; hard, friable, slightly sticky and moderately plastic; common very fine and few fine and medium roots; common fine and very fine tubular pores; 25 percent hard cylindrical medium and coarse cicada casts in matrix; 5 percent gravel and 1 percent cobbles; neutral (pH 7.2); clear wavy boundary.

2Bt2—27 to 40 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, friable, slightly sticky and moderately plastic; few very fine, fine, and coarse roots and common medium roots; common fine and very fine tubular pores; 50 percent hard cylindrical medium and coarse cicada casts in matrix; 5 percent gravel and 1 percent cobbles; neutral (pH 7.2); clear wavy boundary.

2Bw—40 to 59 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to moderate medium and coarse subangular blocky; slightly hard, friable, slightly sticky and moderately plastic; few very fine, fine, and coarse roots and common medium roots; common fine and very fine tubular pores; 10 percent hard cylindrical medium and coarse cicada casts in matrix; 5 percent gravel and 1 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Soil Survey of Kittitas County Area, Washington

2Bk—59 to 60 inches; light gray (10YR 7/1) very gravelly loam, light yellowish brown (10YR 6/4) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine and very fine tubular pores; 10 percent coatings of calcium carbonate on surface of rock fragments; slightly effervescent; 30 percent gravel and 15 percent cobbles; moderately alkaline (pH 7.9).

Thickness of mollic epipedon: 20 to 30 inches

Thickness of volcanic ash influence: 7 to 12 inches

Particle-size control section: 22 to 35 percent clay and 5 to 15 percent rock fragments

A and AB horizons:

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Content of clay—15 to 20 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 2 to 4 moist

Chroma—3 or 4 dry or moist

Texture—silt loam or silty clay loam

Content of clay—23 to 35 percent

Reaction—neutral or slightly alkaline

2Bw horizon (where present below a depth of 40 inches):

Value—4 to 6 dry, 2 to 4 moist

Chroma—3 or 4 dry or moist

Texture—silt loam or silty clay loam

Content of clay—23 to 35 percent

Reaction—neutral or slightly alkaline

2Bk horizon (where present below a depth of 55 inches):

Value—6 or 7 dry, 5 or 6 moist

Chroma—1 or 2 dry, 3 or 4 moist

Texture—gravelly clay loam, very gravelly loam, or cobbly silty clay loam

Content of clay—25 to 35 percent

Calcium carbonate equivalent—1 to 5 percent

Woldale Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on landscape: Swales and depressions of alluvial fans

Parent material: Alluvium

Slope range: 0 to 2 percent

Elevation: 1,500 to 2,300 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 130 to 150 days

Taxonomic classification: Fine, mixed, superactive, mesic Typic Endoaquolls

Typical pedon of Woldale clay loam in Kittitas County, Washington, about 1 mile southwest of Kittitas; 1,300 feet east and 250 feet north of the southwest corner of section. 10, T. 17 N., R. 19 E.; Kittitas, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 58 minutes 18 seconds north and longitude 120 degrees 27 minutes 4 seconds west; NAD 83.

Soil Survey of Kittitas County Area, Washington

- Ap—0 to 5 inches; dark grayish brown (10YR 4/2) clay loam, black (10YR 2/1) moist; strong medium granular structure; hard, firm, slightly sticky and slightly plastic; common fine and medium roots; moderately alkaline (pH 8.0); clear wavy boundary.
- BA—5 to 16 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; strong medium prismatic structure; very hard, very firm, moderately sticky and moderately plastic; common very fine and fine roots; moderately alkaline (pH 8.0); clear smooth boundary.
- Bg—16 to 31 inches; variegated grayish brown (2.5Y 5/2) and grayish brown (10YR 5/2) clay, dark grayish brown (2.5Y 4/2) moist; strong medium prismatic structure; very hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; 10 percent gravel; common medium distinct black (10YR 2/1) redoximorphic segregations and few fine prominent brown (7.5YR 4/4) redoximorphic concentrations; moderately alkaline (pH 8.0); gradual wavy boundary.
- 2BCg—31 to 43 inches; light olive brown (2.5Y 5/4) very gravelly clay, very dark grayish brown (2.5Y 3/2) moist; strong medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; 35 percent gravel and 15 percent cobbles; many medium distinct black (2.5Y 2/0) redoximorphic segregations and few fine prominent brown (7.5YR 4/4) redoximorphic concentrations; slightly alkaline (pH 7.8); abrupt wavy boundary.
- 2Cg—43 to 60 inches; grayish brown (2.5Y 5/2) extremely cobbly clay loam, very dark grayish brown (2.5Y 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 30 percent gravel and 30 percent cobbles; common medium distinct black (10YR 2/1) redoximorphic segregations and few fine prominent brown (7.5YR 4/4) redoximorphic concentrations; slightly alkaline (pH 7.8).

Thickness of mollic epipedon: 13 to 23 inches

Water table: Present some time during the year

Particle-size control section: 40 to 60 percent clay and 5 to 20 percent rock fragments

Reaction: Slightly alkaline or moderately alkaline throughout

Ap horizon:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Content of clay—30 to 40 percent

BA horizon:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Content of clay—40 to 60 percent

Bg horizon:

Hue—10YR or 2.5Y

Value—4 or 5 dry, 3 or 4 moist

Chroma—1 or 2 dry or moist

Content of clay—40 to 60 percent

2BCg horizon:

Hue—2.5Y or 5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—very cobbly clay or very gravelly clay

Content of clay—40 to 60 percent

2Cg horizon:

Hue—2.5Y or 5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—extremely cobbly clay loam, very cobbly clay loam, or extremely gravelly sandy clay loam

Content of clay—27 to 60 percent

Xerofluvents

Depth class: Very deep

Drainage class: Somewhat poorly drained to well drained

Position on landscape: Flood plains and stream terraces

Parent material: Alluvium

Slope range: 0 to 5 percent

Elevation: 1,800 to 2,400 feet

Mean annual precipitation: 20 to 50 percent

Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 110 to 140 days

Taxonomic classification: Xerofluvents

Typical pedon of Xerofluvents in Kittitas County, Washington; about 1,700 feet east and 800 feet north of the southwest corner of section 32, T. 20 N., R. 16 E.; latitude 47 degrees 11 minutes 20 seconds north and longitude 120 degrees 53 minutes 32 seconds west; NAD 83.

Oe—0 to 2 inches; partially decomposed needles; abrupt smooth boundary.

A—2 to 8 inches; grayish brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine roots; few very fine tubular pores; moderately acid (pH 5.8); clear wavy boundary.

AC—8 to 20 inches; brown (10YR 5/3) loamy sand, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; very few very fine and few medium roots; common very fine interstitial and few very fine tubular pores; 5 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

2C1—20 to 23 inches; light reddish brown (2.5YR 6/3) very gravelly loamy sand, weak red (2.5YR 4/2) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium roots; few very fine tubular pores; 30 percent gravel and 10 percent cobbles; moderately acid (pH 6.0); abrupt smooth boundary.

2C2—23 to 60 inches; weak red (2.5YR 5/2) extremely cobbly sand, weak red (2.5YR 4/2) moist; single grain; loose, nonsticky and nonplastic; few coarse roots; many fine interstitial pores; 35 percent gravel and 30 percent cobbles; slightly acid (pH 6.4).

Depth to water table: 36 to 60 inches or more

Particle-size control section: 0 to 5 percent clay and 20 to 65 percent rock fragments

Reaction: Moderately acid or slightly acid throughout

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 10 percent

AC horizon:

Hue—10YR or 2.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Texture—loamy sand, very cobbly loamy sand, very gravelly loamy sand, or gravelly loamy sand

Content of clay—0 to 2 percent

2C horizon:

Hue—10YR or 2.5YR

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 or 3 dry or moist

Texture—extremely cobbly loamy sand, extremely gravelly sand, or very gravelly sand

Content of clay—0 to 2 percent

Yahne Series

Depth class: Very deep

Drainage class: Well drained

Position on landscape: Mountain slopes

Parent material: Residuum and colluvium derived from basalt with a mantle of volcanic ash

Slope range: 5 to 60 percent

Elevation: 2,400 to 5,200 feet

Mean annual precipitation: 40 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 95 to 130 days

Taxonomic classification: Clayey-skeletal, isotic, frigid Andic Palexeralfs

Typical pedon of Yahne cobbly ashy loam in Kittitas County, Washington, about 7 miles southwest of Cle Elum; 1,200 feet south and 400 feet east of the northwest corner of section 32, T. 19 N., R. 15 E.; latitude 47 degrees 5 minutes 58 seconds north and longitude 121 degrees 0 minutes 16 seconds west; NAD 83.

Oi—0 to 1 inch; partially decomposed forest litter; abrupt smooth boundary.

A—1 to 9 inches; pale brown (10YR 6/3) cobbly ashy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; 10 percent gravel and 10 percent cobbles; NaF pH 9.6; slightly acid (pH 6.4); abrupt smooth boundary.

2AE—9 to 17 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and moderately plastic; common fine and few medium roots; common very fine irregular pores; 25 percent gravel and 15 percent cobbles; NaF pH 9.1; moderately acid (pH 6.0); abrupt smooth boundary.

3Bt1—17 to 34 inches; yellowish brown (10YR 5/4) very cobbly clay, dark brown (10YR 3/3) moist; strong medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few medium roots; few very fine irregular pores; many distinct clay films on faces of peds; 15 percent gravel and 35 percent cobbles; NaF pH 9.3; moderately acid (pH 6.0); clear wavy boundary.

3Bt2—34 to 61 inches; yellowish brown (10YR 5/4) very cobbly clay, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine irregular pores; many distinct clay films on faces of peds; 20 percent gravel and 30 percent cobbles; NaF pH 9.4; moderately acid (pH 6.0).

Soil Survey of Kittitas County Area, Washington

Thickness of volcanic ash influence: 7 to 11 inches

Particle-size control section: 35 to 55 percent clay and 45 to 60 percent rock fragments

Reaction: Moderately acid or slightly acid throughout

A horizon:

Value—3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—5 to 15 percent

2AE horizon:

Value—3 or 4 moist

Texture—very cobbly loam, very gravelly loam, or cobbly loam

Content of clay—15 to 25 percent

3Bt horizon:

Value—4 or 5 dry

Chroma—3 or 4 moist

Texture—very cobbly clay, very gravelly clay, or very gravelly clay loam

Content of clay—35 to 55 percent

Yrtneg Series

Depth class: Shallow

Drainage class: Well drained

Position on landscape: Hillslopes, dissected plateaus, and pediment slopes

Parent material: Colluvium and residuum derived from basalt with loess and volcanic ash in the upper part

Slope range: 5 to 30 percent

Elevation: 1,800 to 3,100 feet

Mean annual precipitation: 12 to 15 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 120 to 135 days

Taxonomic classification: Loamy, mixed, superactive, mesic Lithic Argixerolls

Typical pedon of Yrtneg ashy loam in Kittitas County, Washington, about 7 miles south of Ellensburg, Washington; about 800 feet east and 2,300 feet south of the northwest corner of section 3, T. 16 N., R. 18 E.; Ellensburg South, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 54 minutes 21 seconds north and longitude 120 degrees 33 minutes 35 seconds west; NAD 83.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; 5 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

AB—7 to 10 inches; dark grayish brown (10YR 4/2) ashy loam, very dark brown (10YR 2/2) moist; moderate fine, medium, and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine irregular pores; 5 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

2Bt1—10 to 16 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and moderately plastic; common very fine roots; common very fine irregular and tubular pores; few faint pressure faces on peds and few faint clay bridges in

Soil Survey of Kittitas County Area, Washington

pores; 15 percent gravel concentrated at upper boundary; 10 percent very coarse cylindrical cicada casts; 5 percent gravel; neutral (pH 7.0); clear wavy boundary.
2Bt2—16 to 19 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and moderately plastic; common very fine roots; few very fine irregular and many very fine tubular pores; few faint pressure faces on peds, few faint clay bridges in pores and common distinct clay films on rock fragments; 5 percent gravel and 5 percent cobbles; neutral (pH 7.0); abrupt irregular boundary.
2R—19 inches; basalt.

Thickness of mollic epipedon: 12 to 20 inches

Thickness of volcanic ash influence: 8 to 15 inches

Depth to bedrock: 12 to 20 inches

Particle-size control section: 27 to 33 percent clay and 5 to 20 percent rock fragments

Ap and AB horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Content of clay—15 to 25 percent

2Bt horizon:

Texture—clay loam or gravelly clay loam

Content of clay—27 to 33 percent

Reaction—neutral or slightly alkaline

Zen Series

Depth class: Moderately deep

Drainage class: Well drained

Position on landscape: Basalt plateaus and structural benches

Parent material: Colluvium and loess over basalt

Slope range: 3 to 30 percent

Elevation: 1,400 to 2,900 feet

Mean annual precipitation: 9 to 12 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 120 to 170 days

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Calciargidic Argixerolls

Typical pedon of Zen silt loam in Kittitas County, Washington, about 5 miles northwest of Vantage; about 800 feet south and 1,300 feet west of the northeast corner of section 9, T. 17 N., R. 22 E.; Gingko, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 59 minutes 9 seconds north and longitude 120 degrees 4 minutes 34 seconds west; NAD 83.

A—0 to 7 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and few coarse roots; common very fine and fine tubular and vesicular pores; neutral (pH 7.2); gradual wavy boundary.

AB—7 to 12 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, nonsticky and slightly plastic; common very fine and few coarse roots; common fine tubular and vesicular pores; neutral (pH 7.2); clear smooth boundary.

Soil Survey of Kittitas County Area, Washington

Bt1—12 to 19 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine roots; few fine and very fine vesicular pores; many distinct clay films on faces of peds; 5 percent hard cylindrical medium and coarse cicada casts in matrix; neutral (pH 7.2); gradual wavy boundary.

Bt2—19 to 27 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; common very fine roots; few fine and very fine vesicular pores; many distinct clay films on faces of ped; 5 percent hard cylindrical medium and coarse cicada casts in matrix; 5 percent gravel; slightly alkaline (pH 6.3); clear wavy boundary.

Btk—27 to 30 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, very firm, slightly sticky and moderately plastic; common fine and medium vesicular and irregular pores; common distinct clay films on faces of peds; 10 percent calcium carbonate filaments in pores; strongly effervescent; 20 percent gravel; moderately alkaline (pH 8.2); abrupt wavy boundary.

2R—30 inches; basalt.

Thickness of mollic epipedon: 10 to 20 inches

Depth to bedrock: 20 to 40 inches

Depth to secondary carbonates: 14 to 30 inches

Particle-size control section: 22 to 28 percent clay and 5 to 15 percent rock fragments

A horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—12 to 15 percent

Content of rock fragments—0 to 5 percent gravel

Reaction—neutral or slightly alkaline

AB horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Content of clay—12 to 15 percent

Reaction—neutral or slightly alkaline

Bt horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—silty clay loam or clay loam

Content of clay—18 to 35 percent

Reaction—neutral or slightly alkaline

Btk horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—loam, silt loam, gravelly clay loam, or gravelly loam

Content of clay—18 to 38 percent

Calcium carbonate equivalent—5 to 15 percent

Reaction—slightly alkaline to strongly alkaline

Zillah Series

Depth class: Very deep

Drainage class: Poorly drained

Soil Survey of Kittitas County Area, Washington

Position on landscape: Flood plains

Parent material: Alluvium

Slope range: 0 to 2 percent

Elevation: 1,200 to 2,100 feet

Mean annual precipitation: 6 to 12 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 130 to 180 days

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Fluvaquentic
Endoaquolls

Typical pedon of Zillah silt loam in Kittitas County, Washington; about 1,125 feet north and 2,100 feet west of the southeast corner of section 24, T. 17 N., R. 18 E.; Ellensburg South, Washington, U.S. Geological Survey topographic quadrangle; latitude 46 degrees 56 minutes 37 seconds north and longitude 120 degrees 31 minutes 29 seconds west; NAD 83.

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; neutral (pH 7.2); clear smooth boundary.

Ap2—5 to 7 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; few medium distinct yellowish brown (10YR 5/8) iron redoximorphic concentrations on faces of peds and in pores; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; neutral (pH 6.8); clear wavy boundary.

A—7 to 15 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; common medium distinct yellowish brown (10 YR 5/8) iron redoximorphic concentrations on faces of peds and in pores; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine tubular pores; neutral (pH 7.2); clear wavy boundary.

C1—15 to 32 inches; brown (10YR 5/3) silt loam, dark grayish brown (10YR 4/2) moist; many medium distinct yellowish brown (10YR 5/8) iron redoximorphic concentrations on faces of peds and in pores; massive; very friable, slightly sticky and slightly plastic; common very fine roots; common fine tubular pores; neutral (pH 7.2); clear wavy boundary.

C2—32 to 40 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; many coarse prominent yellowish brown (10YR 5/8) iron redoximorphic concentrations in matrix; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; neutral (pH 7.2); abrupt wavy boundary.

C3—40 to 51 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; many coarse prominent yellowish brown (10YR 5/8) iron redoximorphic concentrations in matrix; massive; slightly hard, friable, nonsticky and nonplastic; neutral (pH 7.2); clear wavy boundary.

2C4—51 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; many coarse prominent yellowish brown (10YR 5/8) iron redoximorphic concentrations in matrix; single grain; loose; few fine roots; 45 percent gravel and 10 percent cobbles; neutral (pH 7.2).

Thickness of mollic epipedon: 12 to 24 inches

Apparent water table: Present some time during the year

Particle-size control section: 12 to 18 percent clay

Depth to 2C horizon: 40 inches or more

Ap horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry or moist

Soil Survey of Kittitas County Area, Washington

Texture—silt loam
Content of clay—12 to 18 percent
Reaction—slightly acid to slightly alkaline

A horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or very fine sandy loam
Content of clay—12 to 18 percent
Reaction—neutral or slightly alkaline

C horizon:

Hue—10YR or 2.5Y
Value—5 or 6 dry
Chroma—1 to 3 dry or moist
Texture—silt loam or very fine sandy loam
Content of clay—12 to 18 percent
Reaction—neutral or slightly alkaline

2C horizon:

Hue—10YR or 2.5Y
Value—5 or 6 dry
Chroma—1 to 3 dry or moist
Texture—very gravelly loamy sand, gravelly loamy sand, loamy sand, or extremely
gravelly coarse sand
Content of clay—0 to 5 percent
Reaction—neutral or slightly alkaline

Formation of the Soils

By Herman R. Gentry, soil scientist, Natural Resources Conservation Service; Robert D. Bentley, geologist, and Karl D. Lillquist, geomorphologist, Geography and Land Studies Department, Central Washington University; and Stephen C. Porter, emeritus professor, University of Washington.

Soil is a natural body comprised of solids (minerals and organic matter), liquid, and gases. It is characterized by one or both of the following—horizons, or layers, that are distinguishable from the initial material and the ability to support rooted plants in a natural environment. The properties and characteristics of the soil at any given place are determined by five soil-forming factors—composition of the parent material, the climate under which development has taken place, topography, organisms, and the length of time soil formation has occurred.

Soil formation results from a combination of many processes acting in different proportions and intensities at different times and places on the landscape (Simonson, 1959). The processes of soil formation are additions, removals, transfers, and transformations. An example of an addition is the accumulation of organic matter near the surface. An example of transformation is the conversion of primary minerals to weathering products such as silicate-layered clay, amorphous minerals, or subsoil-cementing agents. Soils with sufficient moisture and hydraulic conductivity tend to undergo removal of weathering products. These removals can be translocated to ground water or downslope to other soils.

Although each of the five soil-forming factors is discussed separately in this section, they are inseparable with respect to soil formation. For example, a change in the climate at a particular location influences the ecology (organisms) which in turn affects the composition of organic matter and its distribution within the soil.

Parent Material

The nature of soils is strongly influenced by the characteristics of the parent material, particularly by its mineralogy and texture. Mineralogy and texture affect various physical and chemical aspects of the soil-forming environment. The soils in this survey area formed in alluvium, organic material, landslide deposits, catastrophic flood deposits, loess, volcanic ash, glacial till, glacial outwash, colluvium, and residuum.

Alluvium

During the Pliocene, local basalt called the Yakima Fold province was deformed and folded upward into ridges. Erosion of the uplifted ridges during the early Pleistocene resulted in gravelly alluvial fan deposits at the base of the ridges. Uplift of the Cascade Range during this time caused a change in the climate from semi-humid to semi-arid. As the climate became drier, silica and calcium carbonate were deposited in the subsoil. Over a long period of time, the calcium carbonate and silica deposits led to the formation of a duripan. The degree of subsoil cementation in this survey area, or the quality of the duripan, varies. This could be a result of local climatic differences, texture of the parent material, or content of volcanic glass. Volcanic ash contains significant glass particles, which weather rapidly compared to most primary minerals.

As the content of glass in a soil increases, more silica is available for weathering and leaching to the subsoil, where it can cement soil particles. The varying content of volcanic ash in the soils may contribute to the variability in the depth to the duripan and the thickness and degree of cementation of the duripan. The Benwy, Selah, and Terlan series are examples of soils in the survey area that formed in older alluvium. Common features of these soils in sequence from the surface downward are a mollic epipedon, an argillic horizon, and a duripan.

Post-glacial modifications of the landscape include localized deposition of recent alluvium. The soils that formed in this recent alluvium show little development other than the accumulation of organic matter in the surface layer and the possible accumulation of soluble salts. Examples are the Mitta and Weirman series.

Organic Material

Organic soils can occur in depressional areas where saturated soil conditions occur near the surface for long durations. Aerobic decomposition of plant material is restricted by saturation and thus organic material accumulates. Organic soils in the survey area usually contain a minor amount of mineral alluvium. Haplosaprists are an example of soils that formed in organic material.

Glacial Till and Drift

During the Pliocene and Pleistocene epochs, alpine glaciers occupied most of the major valleys in the western part of the survey area. As the glaciers moved down the valleys, residual soil material and rock were eroded or plucked from ridges and mountains, ground and mixed, and then deposited as the glaciers melted. This material is known as glacial till. It was directly deposited by glaciers without reworking by water and consists of a heterogeneous mixture of particle sizes. Glacial drift is a more general term for glacial sediment. In the survey area, glacial drift consists largely of till on slopes and outwash gravel from moraines on valley floors. It is the dominant parent material in the upper portions of the valleys. Three major geologic surfaces related to glaciation have been identified and are known locally as Thorp Gravel, Kittitas Drift, and Lakedale Drift. The Thetis, Natkim, Ronsel, and Roslyn series are examples of soils that formed in glacial drift.

Most of the soils in the survey area that formed in glacial drift are mantled by volcanic ash of varying thickness, ranging from a few inches to more than 60 inches. In many areas, the subsoil is dense or cemented and has a high bulk density, which restricts water and roots. Soils that have a restrictive layer and formed in glacial till or glacial drift include the Vabus and Chinkmin series. These soils occur in U-shaped glacial trough valleys. The valleys of Gold Creek, Cooper River, Waptus River, and the upper Cle Elum River are examples.

Outwash (Glacial Fluvial)

As the glaciers melted, streams flowing from the melting ice carried, sorted, and deposited sand and gravel. These stratified deposits, known as outwash, are on terraces and plains of valley bottoms.

Massive moraines or conspicuous terraces from local glaciation occur at Thorp and Swauk Prairies and near Cle Elum. From each of these upper valley moraines, an outwash terrace grades down valley. In the Kittitas Valley, a sequence of at least four mainstream terraces above the Yakima River is traceable up valley to moraines at these locations. In addition, four levels of side stream terraces in northern Kittitas Valley are similarly associated with these surfaces. Soils on mainstream terraces include the Reeser, Reelow, and Sketter series. Examples of soils on the side stream terraces include the Brickmill, Brysill, Millhouse, Nanum, and Opnish series.

Soils that formed in outwash commonly have some volcanic ash influence. The Kladnick series in the Easton area and the Racker series near Cle Elum are examples of soils that formed in outwash.

Large areas of terraces formed by deposits from glacial Lake Missoula during catastrophic floods are in the eastern part of the survey area. The deposits are composed of numerous graded beds. Each bed represents a separate glacial Lake Missoula flood between 12,000 and 16,000 years ago (Waitt, 1980). An ochric epipedon and a cambic horizon are common features of soils that formed in this material. The Malaga and Burbank series are examples.

Loess

Loess is an unconsolidated silty deposit of wind-eroded material. Ringold Formation sediment, slackwater sediment from glacial Lake Missoula outburst floods, and glacial outwash from alpine glaciers are potential sources of loess in the survey area. Examples of soils that formed in loess are the Rollinger and Zen series. The Volinger soils formed in loess mixed with volcanic ash in the upper part and underlain by an argillic horizon that formed in older loess.

Volcanic Ash

Eruptions from Mount Mazama (Crater Lake, Oregon) about 6,800 years before present (BP), Mount St. Helens about 3,400 and 450 years BP, and possibly Glacier Peak about 11,200 years BP have contributed ash to soils in the survey area. In May of 1980, an eruption of Mount St. Helens deposited one-quarter to one-half inch of volcanic ash on the eastern half of the survey area.

The majority of the forested soils in the survey area are influenced by volcanic ash to some degree. The volcanic ash mantle on these soils has been protected from erosion by the forest canopy, whereas the mantle in areas of soils on open range has been eroded. A dramatic increase in the amount of ash or weathering products from ash is evident from Cle Elum westward to the Cascade Crest. A thin mantle of ash covers many of the soils in the Cle Elum area, and soils that formed almost entirely in ash, such as the Stilgar and Jimek series, are near the Cascade Crest.

Colluvium and Residuum

Colluvium consists of soil and rock fragment material that has been transported downslope mainly by gravitational forces. Residuum consists of soil material that is a result of the weathering of rock fragments or bedrock in place.

Major Geologic Material and Formations

During the Miocene and into the Pliocene, many extensive lava flows from fissure eruptions covered part of the survey area. Individual lava flows vary from a few dozen feet thick to more than 100 feet thick. As the lava cooled and crystallized, it became basalt, a dark, fine-grained volcanic rock typical of the Columbia River Basalt Group. Commonly, it weathers to form soils that have smectitic clay mineralogy. In some areas the basalt is interbedded with strongly oxidized sediment. Typically, soils that formed in this oxidized sediment have a high content of clay. Examples of soils that formed in colluvium and residuum derived from basalt are the Disage, Clerf, Laufer, and Jumpmore series. A mollic epipedon and an argillic horizon are common features of these soils. Minor amounts of volcanic ash and loess commonly are in the upper part of these soils.

Volcanic rock of the Oligocene and Miocene include andesite, basalt, breccia, tuff and rhyolite flows, mudflow breccia, interbedded volcanic sandstone, and well-bedded volcanoclastic rock. This volcanic rock is in the western part of the survey area. It is

fine- to medium-grained and commonly weathers to produce soils that have calcite and smectite clay mineralogy (Bentley and others, 1980). The texture of the soils ranges from sandy loam to clay. The Ainsley series is an example of soils that are clay loam or clay. Examples of soils that are loam or silt loam are the Cliffdell, Gilpar, Haywire, and Nimue series and Andic Humicryods. Soils that formed in rhyolite typically are sandy loam. Examples are the Jimek, Standup, and Stilgar series.

Eocene basalt of Frost Mountain is in the southwestern part of the survey area. It weathers red and locally is altered to siliceous white rock. Soils that formed in this parent material commonly have an influence of volcanic ash in the upper part and have a cambic horizon. They typically are loam. Examples include the Cliffdell and Terence series.

The Snoqualmie Batholith rock, consisting of granodiorite and tonalite, is of the Oligocene. It is in the Snoqualmie Pass area, in the northwestern part of the survey area. Soils that formed in this material can have an albic horizon and a spodic horizon. An example is Andic Humicryods. Less developed soils that have an umbric epipedon and a cambic horizon include Andic Dystrocrypts. Soils that formed in this material typically have a subsoil of sandy loam or loamy sand.

From the Lookout Mountain area to the Lion Rock landslides and slumps is sedimentary rock (shale and siltstone with interbedded sandstone) of the lower Wenatchee Formation. Soils that formed in this material typically have a subsoil of clay or clay loam. Common features are a mollic epipedon and an ochric epipedon with a cambic or argillic horizon. Examples of soils that formed in this sedimentary rock are the Jumpe, Loneridge, and Tekison series.

Sedimentary rock of the Roslyn Formation (sandstone and siltstone with thin seams of coal) is in the Cle Elum area. The Ampad series is an example of soils that formed in this material. These soils commonly have a subsoil of sandy loam or loamy sand and an influence of volcanic ash in the upper part. An ochric epipedon and a cambic horizon are common features. The sandstone substratum phase of the Nard series is an example of soils that formed in this sedimentary rock and have an influence of loess and volcanic ash. The soils that have an influence of loess commonly have a subsoil of sandy clay loam, clay loam, or loam. An albic horizon and an argillic horizon are common features.

The Naches Formation, consisting of Eocene rhyolite, andesite and basalt flows, tuff, and breccia, is in an area west of Kachess Lake. The soils in this area have developed andic properties with an albic horizon and a spodic horizon over a cambic horizon. Soils that formed in material from the Naches Formation have a subsoil of sandy loam, loam, or sandy clay loam. Examples are the Nimue and Stirrup series and the sandstone substratum phase of the Stirrup series.

Gray to black Eocene andesite of Peoh Point is south of Cle Elum. Soils that formed in this material are loam or silt loam overlain by a surface layer that is influenced by volcanic ash. Examples are the Jumpe and Terence series.

The Teanaway Formation consists of Eocene basalt, basaltic tuff, and breccia (Bentley and others, 1980). It extends from Flag Mountain to the Cle Elum Lake area. Soils that formed in this material are redder in color because of the higher content of iron. They have an ochric epipedon and an argillic horizon. They range from loam to clay. Examples of soils that have a subsoil of loam to lighter clay loam are the Bograp, Jummer, and Roxer series. Examples of soils that have a subsoil of heavier clay loam to clay are the Bearrun and Keechelus series.

The Taneum Formation, consisting of Eocene andesite, dacite, rhyolite, tuff, and breccia, is in the southwestern part of the survey area. The soils that formed in this material are loam to clay. Examples are the Cliffdell, Terence, and Yahne series.

The Manastash Formation, consisting of Eocene nonmarine sandstone, siltstone, and conglomerate, is in the southwestern part of the survey area (Bentley and others, 1980). This formation may correlate to the Swauk Formation (Taber and others, 1982).

The Osborn and Spexarth soils have a subsoil that formed in material weathered from sandstone and siltstone and are sandy loam or loam.

The Swauk Formation consists of Eocene sandstone, volcanic rock, conglomerate, and ironstone. Soils that have formed in colluvium and residuum derived from the Swauk Formation have a wide range of textures, including loamy sand to silty clay loam, due to the variability of the parent material. Examples of soils that have a coarser textured subsoil are the Deroux and Scotties series. An example of soils that have a finer textured subsoil is the Kafing series.

The Ingalls complex, an intricately mixed combination of lithologies, is of the pre-Tertiary. A unique characteristic of this parent material is a high ratio of magnesium to calcium. The unusually high ratio of these elements, which are also essential plant nutrients, can have a detrimental effect on plant growth. This parent material is in the northern part of the survey area. Commonly, soils that formed in this material have a yellow subsoil and are loam or sandy loam. Examples are the Vanepps, Esmeralda, and Ronsel series.

The pre-Tertiary Lookout Mountain Formation consists of metamorphic rock, such as schist and gneiss, and igneous rock, such as granodiorite. The soils that formed in this material typically have a subsoil of loam or sandy loam. Examples are the Bertolotti, Currier, and Kaner series.

The Ellensburg Formation of the Miocene and Pliocene both overlies and is between flows of the Columbia River Basalt Group. The overlying part is white to reddish brown clay, silt, and gravel. It is tuffaceous and pumice-bearing mudflows (lahar), and the volcanic source is thought to be from the Bumping Lake area. The interbeds are white to yellow clay, silt, and gravel, and the source is both local Cascade streams and the ancestral Columbia River. Soils that formed in this parent material commonly have a subsoil of silty clay loam or clay loam. Examples of soils that formed in material weathered from fine interbedded sediment are the Bedron and Meloza series.

Climate and Organisms

The survey area has a wide range of climatic conditions and biologic communities that are closely correlated. The area lies within the rainshadow of the Cascade Mountains. The eastern part is more strongly influenced by the rainshadow than is the western part. As elevation increases, precipitation generally increases and temperature decreases. In the eastern part of the survey area next to the Columbia River, at the lowest elevation of about 500 feet, the average annual precipitation is about 6 inches and the average annual air temperature is about 50 degrees F. At the highest elevation of about 8,000 feet, in the northwestern part of the survey area near the crest of the Cascade Mountains, the average annual precipitation is about 130 inches and the average annual air temperature is about 37 degrees. Soil development is strongly influenced by the amount of precipitation that is available to infiltrate and leach through the profile. An example of this influence is the accumulation of calcium carbonate in soils that are in the drier precipitation zones. In the higher precipitation zones, where adequate water is available for leaching, carbonates do not accumulate. The organic matter content of soils is strongly influenced by the plant community present over time, which is affected by climate. In the driest parts of the survey area, plant production is low. The soils have less organic matter as compared to soils that receive more precipitation and thus are more productive.

Living organisms are a significant factor in soil formation. Vegetation, microorganisms, and animals, including humans, influence the rate and character of certain chemical and physical processes of soil development. Vegetation is the most important biotic factor in soil formation because it represents the principal source of soil organic matter. Accumulation and decomposition of organic matter are responsible

for the development of A horizons as well as O horizons (slightly decomposed plant material on the mineral surface) in areas of forested soils. Organic matter promotes structural development and stability, which is important for air and water movement in the soil. Available water capacity and the cation-exchange capacity, or nutrient-supplying potential, are increased by additions of organic matter. Plants cycle nutrients through the soil and also provide cover, which minimizes runoff and erosion. Plant roots improve aeration and permeability by increasing soil porosity. Forested soils in the survey area generally have a thinner A horizon than do soils that support rangeland vegetation. Forested soils receive most of their organic matter from litter on the soil surface. Conifer needles and litter from shrubs in areas of forestland decompose slowly. This slow rate of decomposition prevents the formation of a thick A horizon. In contrast, forested soils generally have a thicker O horizon than do rangeland soils. Base saturation and pH in areas of forested soils generally are lower than in areas of rangeland soils. This is partly a result of the higher precipitation and increased leaching in the forested areas, but other factors related directly to the forest vegetation also contribute to the lower base saturation and pH. Organic acids produced from the decomposition of forest litter contribute to soil acidity. Some decomposition products of forest litter act as chelating agents of iron and aluminum compounds, which increase the solubility of these compounds and decrease base saturation and pH.

Soil microorganisms are responsible for the decomposition of organic matter. Nitrogen mineralization and fixation of atmospheric nitrogen, by microorganisms alone or together with legume plants, provide nutrients for plant growth. Microorganisms are also involved in the transformation of phosphorous, sulfur, iron, and other elements in the soils.

Earthworms, rodents, insects, and other burrowing animals influence organic matter accumulation and decomposition. They also improve soil aeration and permeability. The mixing action tends to accelerate soil-forming processes and alterations.

Human influence on soil formation can be substantial. Conversion of forested soils to pastureland or hayland normally will darken and thicken the A horizon, especially in irrigated areas. Additions of organic matter, fertilizer, and other soil amendments will change many chemical and physical soil properties, such as pH, base saturation, and soil tilth.

Distribution of vegetation in the survey area can be divided into several bio-climatic zones based on annual precipitation, temperature, and aspect. In the warmer, drier part of the survey area, which receives 6 to 9 inches of precipitation annually, the natural vegetation is a big sagebrush/bluebunch wheatgrass plant community. The soils have less accumulation of organic matter in the surface layer than do those in other parts of the survey area; the organic matter content in the A horizon is less than 1 percent. The precipitation has not been adequate to leach the calcium carbonate from most of the soils. Examples of soils in this part of the survey area are the Disage, Drino, and Malaga series.

In the 9- to 12-inch annual precipitation zone, the natural vegetation is a big sagebrush/bluebunch wheatgrass plant community on south-facing slopes and a threetip sagebrush/bluebunch wheatgrass plant community on north-facing slopes. This environment produces enough plant growth for the development of a mollic epipedon; the organic matter content of the A horizon is 1 to 2 percent. The precipitation has not been adequate to leach the calcium carbonate from most of the soils. Examples of soils in this zone are the Grinrod, Horseflat, Clerf, and Ralock series.

In the areas that receive 12 to 15 inches of precipitation annually, the natural vegetation is a threetip sagebrush/bluebunch wheatgrass plant community on south-facing slopes and a threetip sagebrush/Idaho fescue plant community on north-facing slopes. The mollic epipedon is darker, and the organic matter content of

the A horizon is 1 to 3 percent on south-facing slopes and 2 to 3 percent on north-facing slopes. Soils in this zone have a mollic epipedon and an argillic or cambic horizon. Calcium carbonate has been leached from all of the soils on north-facing slopes, except the Rollinger and Mozen soils that are in the drier part of this climatic zone.

In the areas that receive 15 to 18 inches of precipitation annually, the natural vegetation is an Idaho fescue-bluebunch wheatgrass/antelope bitterbrush plant community. The mollic epipedon is darker and thicker. The organic matter content of the A1 or Ap horizon is 3 to 5 percent in areas that have a mesic soil temperature regime, except in the Swauk Prairie area, which is a transitional zone to forested soils that has an organic matter content of 1 to 2 percent in the A1 or Ap horizon. The areas that have a frigid soil temperature regime have an organic matter content of 4 to 6 percent in the A horizon and are black when moist. Soils in this zone have a mollic epipedon and an argillic or cambic horizon. Calcium carbonate has been leached from the soils. Examples of soils that have a mesic soil temperature regime are the Pachneum and Swauk series. Examples of soils that have a frigid soil temperature regime, which are on north-facing slopes at moderately high elevations, are the McDaniel and Nint series.

In the areas that receive 18 to 20 inches of precipitation annually, the natural vegetation is dominantly trees and shrubs on all of the soils, except for those that are less than 40 inches deep. The soils support ponderosa pine and dry Douglas-fir plant communities. They have a mollic epipedon and an argillic or cambic horizon. The mollic epipedon may have formed under prairies during a drier period 4,000 to 6,000 years ago. The invasion of coniferous forest during a shift to cooler and moister conditions has not had an effect on the forested soils. Examples of soils that formed in this zone are the Tekison and Meystre series.

In the areas that receive 20 to 35 inches of precipitation annually, the natural vegetation is forests of dry grand fir and moderately dry Douglas-fir. Soils in this zone typically have an influence of volcanic ash in the upper part and have an ochric epipedon and a cambic or argillic horizon. Some soils in this zone support a grassland plant community and have a mollic epipedon. Examples of soils in this zone are the Jumpe, Sapkin, Scotties, and Teanaway series.

In the areas that receive 35 to 60 inches of precipitation annually and have mild temperatures, moist grand fir forest is the dominant plant community. Soils in this zone typically have an influence of volcanic ash in the upper part, an ochric epipedon, and a cambic or argillic horizon. Examples of soils in this zone are Andic Dystroxerepts and the Jumpmore, Keechelus, Nard, and Roslyn series. At higher elevations in this zone, subalpine fir and whitebark pine forests are typical. The soils in the high mountain meadows have a mollic epipedon and a cambic horizon. Examples are the Darland, Naxing, and Saydab series.

In the areas that receive 50 to 80 inches of precipitation annually and have cold temperatures, forests of Pacific silver fir, western hemlock, mountain hemlock, and whitebark pine are common. The precipitation has been sufficient in the wetter areas to leach compounds consisting of complexes of organic matter, iron, and aluminum to form an albic horizon and a spodic horizon. The drier areas have an umbric epipedon and a cambic horizon. The soils in the subalpine meadows have an umbric epipedon and a cambic horizon. Examples of forested soils in this zone are the Domerie, Esmeralda, and Vabus series. An example of soils in the subalpine meadows is Andic Dystrocryepts.

In the areas that receive 80 to 110 inches of precipitation annually and have cold temperatures, the forests consist of mountain hemlock. Under relatively undisturbed conditions, the soils can have a layer of organic litter as much as 5 inches thick at the surface. The precipitation has been sufficient to leach compounds consisting of

complexes of organic matter, iron, and aluminum to form an albic horizon and a spodic horizon. The soils commonly have secondary minerals derived from volcanic ash that have a high available water capacity. Examples are the Chinkmin and Nimue series.

At the highest elevations, precipitation ranges to as much as 130 inches and temperatures are very cold. Under these harsh conditions, the mountain hemlock forests have an open canopy. Andic Humicryods are representative of soils in these areas.

Past climatic conditions in the survey area, especially during the Pleistocene, favored periods of soil profile development followed by periods when sedimentation or erosion proceeded more slowly than the soil-forming processes. Frye suggested that glacial intervals were periods of soil destruction or burial and that interglacial intervals were periods of soil formation (Frye, 1951). Soils in this survey area appear to have eroded to the depth of the resistant horizon, such as the clay-rich B horizon. Some of the soils have a stoneline at the surface of a strongly developed Bt horizon. The long axis of the rock fragments are oriented parallel to the surface of the horizon. The orientation suggests that the stoneline is a buried erosion pavement, which originally formed as a result of erosion of fine-grained material from sloping areas. As the slopes were eroded, rock fragments concentrated as lag on the surface. An example of soils that have a stoneline is the Clerf series.

Topography

The configuration of the land surface, or topography, affects soil formation in numerous ways. Slope orientation or aspect affects the amount of solar radiation received at a given site, which influences soil temperature and evapotranspiration. Soils on north-facing slopes receive less solar radiation; thus, these soils have a lower evapotranspiration rate than do soils on south-facing slopes. The soils on the north aspects have a denser vegetative cover than do the soils on south aspects. The denser vegetative cover provides more organic matter to the soils and protection from soil erosion, which results in deeper soils and in drier climatic zones, a thicker mantle of volcanic ash. On south-facing slopes, sparse vegetation and a higher rate of soil erosion result in shallow or moderately deep soils that have little, if any, volcanic ash. The Argabak and Horseflat series are examples of soils on south-facing slopes. They are 10 to 20 inches deep to bedrock and have little, if any, volcanic ash. The Bertolotti and Ainsley series are examples of soils on north-facing slopes. These soils are more than 60 inches deep to bedrock.

The steepness of slope also has a strong influence on soil formation. Soils on steep slopes commonly have minimal profile development because the rate of removal of soil material by water erosion and mass movement is nearly as great as the rate of soil development. In gently sloping areas, clay-enriched subsoil development is common. The position on the landscape can also affect the soil moisture regime. Most upland soils are rarely saturated, but soils in low-lying positions, such as flood plains, low terraces, and valley bottoms, commonly have a high water table. Soils of the Kayak and Nanum series have a seasonal high water table.

Time

The weathering of rock and minerals and the development of soil horizons are partially dependent on time. The interaction of the other soil-forming factors over time determines the degree of soil development. The oldest soils in the survey are those that have not been glaciated and do not have a thick deposit of volcanic ash or loess. These include some of the soils that formed in basalt, granite, sandstone, gneiss, and schist. These soils may be more than 20,000 years old, but in all likelihood the soil-forming factors have not been the same during that time. Fluctuation in climate and vegetation result in variations in the rate of soil development. Glaciers in the

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survey area retreated about 14,000 to 12,000 years ago. The first volcanic layers from Glacier Peak were deposited on the landscape about 11,200 years ago. Soils that formed in volcanic ash and glacial material with volcanic ash have been exposed to soil development long enough to develop a cambic horizon. Soils of the Natkim series formed in volcanic ash and glacial till. In areas of higher precipitation, a spodic horizon has developed in the 3,400- to 6,900-year-old mantle of volcanic ash. Soils of the Vabus, Chinkmin, and Kachess series are in the higher precipitation zone and have a spodic horizon. The youngest soils are those that formed in alluvium. These soils do not have genetic horizons. Soils of the Kayak and Weirman series and Xerofluvents formed in recent alluvium.

Following is a geologic timeline. The abbreviation "Ma" means million years ago.

Cenozoic era (65 Ma to present)

 Tertiary period (65 to 1.8 Ma)

 Paleocene epoch (65 to 54.8 Ma)

 Eocene epoch (54.8 to 33.7 Ma)

 Oligocene epoch (33.7 to 23.8 Ma)

 Miocene epoch (23.8 to 5.3 Ma)

 Pliocene epoch (5.3 to 1.8 Ma)

 Quaternary period (1.8 Ma to present)

 Pleistocene epoch (1.8 to 0.01 Ma)

 Holocene epoch (0.01 Ma, or 10,000 years before present, to present)

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the “National Soil Survey Handbook” (available in local offices of the Natural Resources Conservation Service or on the Internet).

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

Abrupt textural change. A soil horizon boundary or thin transitional zone characterized by a considerable increase in clay that occurs at the contact between a surface layer, subsurface layer, subsoil, or substratum.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Albic horizon. An eluvial horizon that is at least 1 centimeter thick or more. The color of the soil material is largely determined by the color of primary sand and silt particles rather than by the color of their coatings (Soil Survey Staff, 1999).

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone. A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha, alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Alpine. Characteristic of or resembling the European Alps, or any lofty mountain or mountain system, especially one so modified by intense glacial erosion as to

contain cirques, horns, etc. Sometimes used to designate areas above or near timberline.

Amphibolite. A rock consisting largely of hornblende.

Andesite. A fine-grained volcanic rock consisting mainly of plagioclase feldspar with small amounts of pyroxene, hornblende, or biotite. It is dark colored, mainly shades of gray or green.

Andic soil properties. A collection of physical and chemical properties that define the criteria for the Andisol order (Soil Survey Staff, 1999).

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Anticline. A unit of folded strata that is a convex upland. In a single anticline, beds forming the opposite limbs of the fold dip away from its axial plane.

Apite. Light-colored, finely grained granite made up of quartz and feldspar.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay (Soil Survey Staff, 1999).

Aridic. A soil moisture regime common to a climate that lacks soil moisture available for plant growth during the growing season. The soils are dry for more than 50 percent of the growing season (Soil Survey Staff, 1999).

Arkose. Sandstone containing unaltered feldspar; usually formed in mountainous regions from weathered granite.

Ash (volcanic). Unconsolidated, pyroclastic material less than 2 millimeters in all dimensions; commonly called volcanic ash.

Ashy (family particle-size class). A substitute class term used for the family particle-size in mineral soils (Soil Survey Staff, 1999).

Ashy (textural modifier; for example, ashy sandy loam). A term used to describe material in which the fine-earth fraction has 30 percent or more particles that are 0.02 to 2.0 millimeters in diameter. Of this, 5 percent or more is volcanic glass and the ammonium oxalate extractable aluminum plus $\frac{1}{2}$ the ammonium oxalate extractable iron times 60 added to the percentage of volcanic glass are equal to or more than 30.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Aspect, north. All compass directions with a northerly aspect, including west-northwest, northwest, north-northwest, north, north-northeast, northeast, and east-northeast. North aspects have less solar radiation than south aspects and consequently are cooler and more moist.

Aspect, south. All compass directions with a southerly aspect, including east-southeast, southeast, south-southeast, south, south-southwest, southwest, and west-southwest. South aspects have more solar radiation than north aspects and consequently are warmer and more droughty.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 2
Low	2 to 3.75
Moderate.....	3.75 to 5
Moderately low.....	5 to 7.5
High	7.5 to 10
Very high.....	more than 10

- Avalanche chute.** The central channel-like corridor, scar, or depression along which an avalanche has moved. It may take the form of an open path in a forest, with bent and broken trees, or an eroded surface marked by pits, scratches, and grooves.
- Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.
- Backswamp.** A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.
- Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.
- Basalt.** A fine-grained, dark-colored extrusive igneous rock composed primarily of calcic plagioclase and pyroxene, with or without olivine.
- Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- Base slope** (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).
- Basin.** A low area in the earth's crust, of tectonic origin, in which sediment has accumulated.
- Batholith.** A large, domed mass of intrusive igneous rock such as granite.
- Bedding plane.** A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.
- Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.
- Bench terrace.** A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.
- Blowout.** A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.
- Bottom land.** An informal term loosely applied to various portions of a flood plain.
- Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.
- Breast height.** An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.
- Breccia.** Coarse grained, clastic rock made up of angular broken rock fragments that are held together by mineral cement or are in a fine-grained matrix.
- Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Bulk density. The mass of soil per unit bulk volume. Moist bulk density refers to the oven-dry weight of a given volume of soil with moisture content at or near field moisture capacity.

Butte. An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Calcic horizon. A subsurface horizon that has an accumulation of calcium carbonate or of calcium and magnesium carbonate (Soil Survey Staff, 1999).

Calcium carbonate equivalent. The quantity of carbonates (CO_3) in the soil, expressed as CaCO_3 and as a percentage by weight of the fraction less than 2 millimeters in size.

Caliche. A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

Cambic horizon. A mineral soil horizon that is loamy very fine sand or finer textured and has soil structure rather than rock structure. The cambic horizon contains some weatherable minerals, and it is characterized by alterations or removals as indicated by redoximorphic features or by stronger chroma or redder hue than that of the underlying horizons (Soil Survey Staff, 1999).

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Canyonland (general landscape). A deeply dissected landscape composed dominantly of relatively narrow flood plains or valley floors, commonly with considerable outcroppings of bedrock on steep slopes, ledges, or cliffs and with broad summits or interfluvies.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Carbonates. Chemical compounds containing the carbonate ion CO_3 in combination with bases such as calcium, magnesium, potassium, and sodium.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

- Channery soil material.** Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a chanter.
- Chemical treatment.** Control of unwanted vegetation through the use of chemicals.
- Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.
- Cinder.** A glassy vesicular pyroclastic volcanic fragment that is 2 millimeters or more in all dimensions and is strongly cemented or has a stronger degree of cementation.
- Cirque.** A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).
- Clastic.** Pertaining to rock or sediment composed mainly of fragments derived from pre-existing rock or minerals and moved from their place of origin.
- Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- Clay depletions.** See Redoximorphic features.
- Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.
- Climax forest stage.** The culminating forest succession stage. Overstory vegetation is dominated by trees that are climax for the site. Vertical depth of the understory and overstory canopies is at a maximum. Seedlings to maximum-size, mature trees are present in varying amounts, resulting in an uneven-aged stand.
- Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.
- Climax tree.** The most competitive tree capable of growing on a particular site.
- Coarse textured soil.** Sand or loamy sand.
- Coarse-loamy.** A loamy particle-size class that is 15 percent or more fine sand or coarser, including fragments as much as 3 inches in diameter, and is less than 18 percent clay in the fine-earth fraction.
- Coarse-silty.** A loamy particle-size class that is less than 15 percent fine sand or coarser, including fragments as much as 3 inches in diameter, and is less than 18 percent clay in the fine-earth fraction.
- Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.
- Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.
- COLE (coefficient of linear extensibility).** See Linear extensibility.
- Colluvium.** Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (for example, direct gravitational action) and by local, unconcentrated runoff.
- Compaction.** The increase in soil bulk density as a result of applied loads or pressure. Compaction reduces porosity, water infiltration, and root penetration.
- Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.
- Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them

separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. See Redoximorphic features.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Coniferous. Pertaining to plants of the *Coniferales* order of the *Gymnospermae* subdivision. Coniferous plants have cone fruit and are commonly, but not always, evergreen. Examples include ponderosa pine, Douglas-fir, and western larch.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Continental glaciation. Refers to the glaciers that covered much of North America during the Ice Age, as opposed to contemporary glaciers associated with mountains.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cordilleran ice sheet. The glacial ice sheet that covered much of the northern half of North America, from the eastern face of the Rocky Mountains to the Pacific Ocean, during the Pleistocene.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Coulee. A dry or intermittent stream valley, especially a long, steep-walled gorge representing a channeled scabland overflow channel that carried meltwater from the glacial Lake Missoula floods.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

- Cropping system.** Growing crops according to a planned system of rotation and management practices.
- Cross-slope farming.** Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.
- Crown.** The upper part of a tree or shrub, including the living branches and their foliage.
- Cryic.** A soil temperature regime in which the mean annual soil temperature at a depth of 20 inches ranges from 33 to 46 degrees F. The mean summer soil temperature is less than 47 degrees for soils that have an O horizon, and it is less than 59 degrees for soils that do not have an O horizon.
- Cryoturbate.** A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.
- Culmination of the mean annual increment (CMAI).** The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.
- Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.
- Decreasers.** The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.
- Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period.
- Dense layer** (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.
- Densic contact.** A boundary between soil and coherent underlying material that restricts the penetration of roots, is not cemented, and is typically referred to as dense glacial till and as a Cd horizon.
- Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.
- Diagnostic horizons.** Combinations of specific soil characteristics that are indicative of certain classes of soils. Those that occur at the soil surface are called epipedons, and those that occur below the soil surface are called diagnostic subsurface horizons.
- Diamict.** A nonsorted or poorly sorted, unconsolidated deposit that contains a wide range of particle sizes, commonly from clay to cobble- or boulder-sized, rounded and/or angular fragments with a clayey, silty, or sandy matrix, depending on the local source bedrock.
- Diatomaceous earth.** A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.
- Dike.** An intrusion of rock that cuts across the bedding or foliation of the pre-existing rock.
- Diorite.** A coarse-grained igneous rock consisting mainly of plagioclase but with smaller amounts of hornblende, biotite, and pyroxene. Quartz is absent or sparse. See Quartz diorite.
- Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.
- Dolomite.** A sedimentary rock consisting mainly of the mineral dolomite, which is a carbonate of magnesium.
- Drainage class** (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the

water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained*, *somewhat excessively drained*, *well drained*, *moderately well drained*, *somewhat poorly drained*, *poorly drained*, and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Drift. A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Durinodes. Nodules that are weakly cemented to indurated with silica oxide (SiO₂).

Duripan. A subsurface soil horizon that is cemented by illuvial silica, commonly opal or microcrystalline forms of silica, to the degree that less than 50 percent of the volume of air-dry fragments will slake in water or hydrochloric acid.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Effervescence. The gaseous response exhibited as bubbles on the soil ped when drops of dilute (1:10) hydrochloric acid (HCl) are applied. This response typically indicates the presence of calcium carbonates (CaCO₃).

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erratic. Refers to a rock fragment transported by glacial ice or floating ice that is different from the bedrock in the area in which it is deposited.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Esker. A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fault. A fracture or fracture zone of the earth with displacement along one side in respect to the other.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Fine-loamy. A loamy particle-size class that is 15 percent or more fine sand or coarser, including fragments as much as 3 inches in diameter, and is 18 to 34 percent clay in the fine-earth fraction.

Fine-silty. A loamy particle-size class that is less than 15 percent fine sand or coarser, including fragments as much as 3 inches in diameter, and is 18 to 34 percent clay in the fine-earth fraction.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

- Flaggy soil material.** Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.
- Flagstone.** A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.
- Flood plain.** The nearly level plain that borders a stream and is subject to flooding unless protected artificially.
- Flood-plain landforms.** A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.
- Flood-plain splay.** A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.
- Flood-plain step.** An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.
- Fluvial.** Of or pertaining to rivers or streams; produced by stream or river action.
- Foliated.** Refers to metamorphic rock that exhibits parallel structure or layering.
- Foothills.** A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).
- Footslope.** The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).
- Forb.** Any herbaceous plant not a grass or a sedge.
- Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.
- Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.
- Forestland.** Land on which the historic vegetation was dominated by a 25 percent overstory canopy cover of trees, as determined by crown perimeter-vertical projection. A tree is defined as a woody-stemmed plant that can grow to 4 meters (about 13 feet) in height at maturity.
- Fragmental.** A particle-size class used to classify mineral soils that have less than 10 percent by volume fine-earth soil material.
- Rigid.** A soil temperature regime in which the mean annual soil temperature at a depth of 20 inches ranges from 33 to 46 degrees F. The mean summer soil temperature is more than 47 degrees for soils that have an O horizon. The difference between the mean winter soil temperature and the mean summer soil temperature is more than 9 degrees F.
- Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Geomorphic surface.** A mappable area of the earth's surface that has a common history; the area is of similar age and is formed by a set of processes during an episode of landscape evolution.
- Glaciofluvial deposits.** Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.
- Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

- Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.
- Graben.** An elongated, relatively depressed unit or block of the earth's crust that is bounded by faults on its long sides.
- Graded stripcropping.** Growing crops in strips that grade toward a protected waterway.
- Granite.** A coarse-grained igneous rock consisting mainly of quartz and feldspar, with more orthoclase than plagioclase. See Granodiorite.
- Granitic.** Term generally applied to granite or granitelike rock. It is used when referring to granite, granodiorite, quartz monzonite, quartz diorite, diorite, and granitic gneiss.
- Granitic gneiss.** A crystalline, banded metamorphic rock of granitic composition.
- Granodiorite.** A coarse-grained igneous rock consisting mainly of quartz and feldspar, with more plagioclase than orthoclase. See Granite.
- Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.
- Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.
- Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.
- Graywacke.** An indurated sedimentary rock that consists mainly of sand-sized grains but contains fragments of feldspar, quartz, and ferromagnesian minerals.
- Grazing system, planned.** A system for managing rangeland in which three or more fields are alternately grazed and then rested in a planned sequence for a period of years.
- Green manure crop (agronomy).** A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.
- Ground water.** Water filling all the unblocked pores of the material below the water table.
- Grus.** The fundamental products of *in situ* granular disintegration of granite and granitic rock, dominated by intercrystal disintegration.
- Gully.** A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.
- Gypsum.** A mineral consisting of hydrous calcium sulfate.
- Habitat type.** The collective area occupied by a single plant association. It is defined and described on the basis of the vegetation and its associated environment.
- Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- Hard to reclaim (in tables).** Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.
- Hardpan.** A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.
- Head slope (geomorphology).** A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.
- Hemic soil material (mucky peat).** Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

- High-residue crops.** Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.
- Hill.** A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.
- Hillslope.** A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.
- Histic epipedon.** A thin, organic soil horizon that is saturated with water at some time during the year unless it is artificially drained. This horizon is at or near the surface of a mineral soil. It contains more than 12 percent organic carbon (Soil Survey Staff, 1999).
- Historic climax plant community.** The plant community that was best adapted to the unique combination of factors associated with the ecological site. It was in a natural dynamic equilibrium with the historic biotic, abiotic, and climatic factors on its ecological site in North America at the time of European immigration and settlement.
- Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:
- O horizon.*—An organic layer of fresh and decaying plant residue.
- L horizon.*—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.
- A horizon.*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
- E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.
- B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.
- C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.
- Cr horizon.*—Consolidated bedrock beneath the soil that has an extremely weakly cemented to moderately cemented rupture-resistance class.
- R horizon.*—Consolidated bedrock beneath the soil that has a strongly cemented or stronger rupture-resistance class.
- Humus.** The well decomposed, more or less stable part of the organic matter in mineral soils.
- Hydrologic soil groups.** Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high

water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasesers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasesers commonly are the shorter plants and the less palatable to livestock.

Indurated. Refers to having a hard, brittle consistency as a result of particles being held together by cementing substances such as silica, calcium carbonate, and iron. An indurated layer can be broken by a sharp blow of a hammer.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Intermontane basin. A generic term for a wide structural depression between mountain ranges that is partly filled with alluvium.

Intrusive rock. Igneous rock derived from molten matter (magmas) that invaded pre-existing rock and cooled below the surface of the earth.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements.

Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Kettle. A steep-sided, usually basin- or bowl-shaped hole or depression, commonly without surface drainage in glacial-drift deposits, often containing water.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Ksat. See Saturated hydraulic conductivity.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Lamella. A thin, discontinuous or continuous, generally horizontal layer of fine material (especially clay and iron oxides) that has been pedogenically concentrated (illuviated) within a coarser (e.g., sandy), eluviated layer.

Landform. Any physical, recognizable form or feature on the earth's surface that has a characteristic shape and range in composition and is produced by natural causes; it can span a wide range in size. Landforms provide an empirical description of similar portions of the earth's surface.

Landscape (soils). An assemblage, group, or family of spatially related, natural landforms over a relatively large area; the land surface which the eye can comprehend in a single view.

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement

may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across.

Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Leeward. Being in or facing the direction toward which the wind is blowing.

Limestone. Sedimentary rock consisting mainly of calcium carbonate (CaCO_3).

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $\frac{1}{3}$ - or $\frac{1}{10}$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Lithic contact. A boundary between soil and coherent underlying material, typically bedrock. The bedrock has a cementation class of strongly cemented or stronger and is typically referred to as an R horizon.

Lithologic discontinuity. A significant change in particle-size distribution or mineralogy that indicates a difference in the material from which the soil horizons have formed.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy-skeletal. A particle-size class in which rock fragments 2 millimeters in diameter or larger make up 35 percent or more by volume. The fine-earth fraction is loamy.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Longshore drift. Material (such as sand or gravel) that is moved parallel to and near a shore.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Major Land Resource Area (MLRA). A broad geographic land area characterized by a particular pattern of soils, geology, climate, water resources, and land use. An area is typically continuous, but small separate areas can occur.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Mature forest stage. A forest successional stage in which the most shade-tolerant adapted tree species are well represented (more than 50 percent composition) and are dominant in the middle to upper canopy layers. Trees generally are more than 9 inches in diameter at breast height, and the canopy cover is more than 25 percent.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medial (family particle-size class). A substitute class term used for the family particle-size class in mineral soils (Soil Survey Staff, 1999).

Medial (textural modifier, such as medial loam). A USDA textural modifier used in conjunction with a USDA mineral soil texture to indicate unique physical and chemical properties. The properties are defined in Soil Taxonomy and are typically low bulk density, high content of iron and aluminum, and high retention of phosphate (Soil Survey Staff, 1999).

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesic. A soil temperature regime in which the mean annual temperature at a depth of 20 inches ranges from 47 to 58 degrees F. The difference between the mean winter soil temperature and the mean summer soil temperature is more than 9 degrees F.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Microclimate. The climate of a small distinct area, as of a forest or city, or a confined space, as of a building or greenhouse.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit component that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Moisture control section. The layer within a soil profile used to determine the soil moisture regime. The upper boundary is the depth to which a dry soil is moistened by 1 inch of water in 24 hours. The lower boundary is the depth to which a dry soil is moistened by 3 inches of water in 48 hours.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil (Soil Survey Staff, 1999).

Moraine. In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size

measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

- Mountain.** A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.
- Mountain valleys.** Any small, externally drained depression floored with either till or alluvium, that occurs on a mountain or within mountains. See intermontane basins.
- Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- Mucky peat.** A USDA texture associated with organic soils that meet the degree of organic matter decomposition associated with hemic soil material.
- Mudstone.** A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.
- Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Natric horizon.** A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil (Soil Survey Staff, 1999).
- Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- Nodules.** See Redoximorphic features.
- Nose slope** (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).
- Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
- Ochric epipedon.** A surface horizon of mineral soil that is too light in color, too high in chroma, too low in organic carbon, or too thin to be a mollic, umbric, or histic epipedon (Soil Survey Staff, 1999).
- Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:
- | | |
|---------------------|-----------------------|
| Very low | less than 0.5 percent |
| Low | 0.5 to 1.0 percent |
| Moderately low..... | 1.0 to 2.0 percent |
| Moderate..... | 2.0 to 4.0 percent |
| High | 4.0 to 8.0 percent |
| Very high..... | more than 8.0 percent |
- Orogenic.** Of or pertaining to the process of mountain formation.
- Outwash.** Stratified and sorted sediment (mainly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain. An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Outwash terrace. A valley train deposit extending along a valley downstream from an outwash plain or terminal moraine; a flat-topped bank of outwash with an abrupt outer face.

Overstory. The trees in a forest stand that form the upper crown cover. See Understory.

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Paralithic contact. A boundary between soil and coherent underlying material that can be dug with difficulty with a spade. It is referred to as weathered bedrock, has a cementation class of moderately cemented or weaker, and is typically referred to as a Cr horizon.

Pararock fragments. Fragments of rock that are 2 millimeters in diameter or more (e.g., paragravel, paracobble, or parastone). Pararock fragments have a moderately cemented to extremely weakly cemented rupture-resistance class.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedologic. Of or pertaining to the processes of soil formation.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual” and in this glossary. Terms describing permeability, measured in inches per hour, are as follows:

Impermeable.....	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow.....	0.2 to 0.6 inch
Moderate.....	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid.....	more than 20 inches

See “Saturated hydraulic conductivity” for conversions of inches per hour to micrometers per second.

Perudic. A soil moisture regime common to a climate having moisture throughout the year. The soil moisture control section never becomes dry throughout its thickness during any time of the year (Soil Survey Staff, 1999).

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Phyllite. A fine-textured, foliated metamorphic rock that is intermediate in metamorphic grade between slate and schist. Mica crystals impart a silky sheen to the cleavage surfaces.

- Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.
- Placic horizon.** A thin (less than 1 inch thick), black to dark reddish colored horizon that is cemented by iron (or iron and manganese) and organic matter (Soil Survey Staff, 1999).
- Plant association.** A kind of climax plant community consisting of stands with essentially the same dominant species in corresponding layers.
- Plant community.** An assemblage of plants living together, reflecting no particular ecological status; a vegetative complex unique in its combination of plants.
- Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.
- Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.
- Plateau** (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.
- Pleistocene.** The epoch of geologic time from approximately 10,000 to 2 million years ago. The earlier of the two epochs comprising the Quaternary period. Also called the Glacial epoch.
- Plowpan.** A compacted layer formed in the soil directly below the plowed layer.
- Pole stage.** A forest successional stage in which the vegetation of a stand is dominantly a moderately dense to very dense overstory of trees that have minimal vertical crown depth. The trees generally range from about 5 to 9 inches in diameter at breast height, and the canopy cover normally exceeds 35 percent.
- Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.
- Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.
- Pore linings.** See Redoximorphic features.
- Potential native plant community.** See Climax plant community.
- Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.
- Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.
- Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.
- Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.
- Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.
- Pumice.** A light-colored, vesicular, glassy pararock fragment. The fragments are more than 2 millimeters in diameter and commonly have the composition of rhyolite. Pumice commonly has a specific gravity of less than 1.0 and is thereby sufficiently buoyant to float on water.
- Pyroclastic.** Pertaining to fragmental material produced by commonly explosive, aerial ejection of clastic particles from a volcanic vent.

- Quartz diorite.** A coarse-grained igneous rock consisting mainly of plagioclase with smaller amounts of quartz, hornblende, and biotite. (See Granodiorite.)
- Quartz latite.** A fine-grained volcanic rock consisting mainly of quartz, plagioclase, and orthoclase with minor amounts of biotite and hornblende. Phenocrysts are common. This rock is the extrusive equivalent of quartz monzonite.
- Quartz monzonite.** A coarse-grained igneous rock consisting mainly of plagioclase, orthoclase, and quartz with minor amounts of biotite and hornblende. (See Granite and Granodiorite.)
- Quartzite.** A nonfoliated metamorphic rock consisting mainly of quartz sand cemented with quartz.
- Quaternary.** The period of the Cenozoic era of geologic time, extending from the end of the Tertiary (about 2 million years ago) to the present and comprising two epochs, the Pleistocene (Ice Age) and the Holocene (Recent).
- Rangeland.** Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.
- Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid.....	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid.....	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline.....	7.4 to 7.8
Moderately alkaline.....	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline.....	9.1 and higher

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
 - A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
 - B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
 - C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. Redoximorphic depletions.—These are zones of low chroma (chroma less than that of the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
 - A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix;
and
 - B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletalans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Restrictive feature. A nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly reduce the movement of water and/or air through the soil or that otherwise provide an unfavorable root environment.

Rhyodacite. A fine-grained volcanic rock consisting mainly of quartz and feldspar, with more plagioclase than orthoclase. Phenocrysts are common. Rhyodacite is the extrusive equivalent of granodiorite.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riparian. Refers to areas adjacent to water or wetlands; vegetation is dependent on water or use and management directly impacts the water or wetlands.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Riverwash. Unstable areas of sandy, silty, clayey, gravelly and cobbly sediments. These areas are flooded, washed and reworked by rivers so frequently that they support little or no vegetation; see National Soil Survey Handbook

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments that are 2 millimeters in diameter or more (i.e., gravel, cobbles, stones, and boulders). Rock fragments have a strongly cemented or stronger rupture-resistance class.

Rock outcrop. Exposures of bare bedrock.

Rubble land. Areas that consist of cobbles, stones, and boulders, commonly at the base of mountains.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

- Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.
- Sandstone.** Sedimentary rock containing dominantly sand-sized particles.
- Sandy.** A particle-size class in which the texture of the fine-earth fraction is sand or loamy sand but not loamy very fine sand or very fine sand; it is less than 35 percent rock fragments by volume.
- Sandy-skeletal.** A particle-size class that is 35 percent or more by volume rock fragments 2 millimeters in diameter or larger. The fine-earth fraction is sandy.
- Sapling/pole stage.** A forest successional stage in which the vegetation of a stand is dominantly saplings and pole-sized trees (generally 2 to 9 inches in diameter at breast height). The canopy cover and understory production are intermediate between the herbaceous or shrub stage and the pole stage.
- Sapric soil material (muck).** The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.
- Saturated hydraulic conductivity (Ksat).** The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are *very high*, 100 or more micrometers per second (14.17 or more inches per hour); *high*, 10 to 100 micrometers per second (1.417 to 14.17 inches per hour); *moderately high*, 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour); *moderately low*, 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour); *low*, 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour); and *very low*, less than 0.01 micrometer per second (less than 0.001417 inch per hour). To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.
- Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
- Scarification.** The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.
- Schist.** A medium- to coarse-grained foliated metamorphic rock in which the platy minerals are clearly visible. Micaceous minerals commonly are present.
- Secondary carbonates and silica.** Calcium carbonate and silica weathered from the soil matrix in upper soil horizons and then transported and deposited in the lower horizons by water moving through the soil profile.
- Sedimentary rock.** A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.
- Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)
- Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.
- Shale.** Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

- Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
- Shoulder.** The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.
- Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
- Shrub-coppice dune.** A small, streamlined dune that forms around brush and clump vegetation.
- Side slope** (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.
- Silica.** A combination of silicon and oxygen. The mineral form is called quartz.
- Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- Siltstone.** An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.
- Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.
- Slate.** A fine-grained metamorphic rock that exhibits strong cleavage or layering.
- Slickensides** (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.
- Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 3 percent
Gently sloping.....	4 to 8 percent
Strongly sloping.....	9 to 16 percent
Moderately steep	17 to 30 percent
Steep	31 to 45 percent
Very steep.....	46 percent and higher

Classes for complex slopes are as follows:

Nearly level	0 to 3 percent
Undulating.....	4 to 8 percent
Rolling.....	9 to 16 percent
Hilly.....	17 to 30 percent
Steep	31 to 45 percent
Very steep.....	46 percent and higher

- Slope alluvium.** Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in

size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow water movement (in tables). Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Slump. A mass movement process characterized by a landslide involving shearing and rotary movement of a generally independent mass of rock or earth along a curved slip surface. The mass (slump) has its axis parallel to the slope from which it descends. A slump surface commonly exhibits a reversed slope facing uphill.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to $\text{Ca}^{++} + \text{Mg}^{++}$. The degrees of sodicity and their respective ratios are:

Slight.....	less than 13:1
Moderate.....	13-30:1
Strong	more than 30:1

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay.....	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spodic horizon. An illuvial horizon that is 85 percent or more spodic material. This layer is dominated by active amorphous material that is illuvial and is composed of organic matter and aluminum, with or without iron (Soil Survey Staff, 1999).

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stoniness (or boulderiness). The relative proportion of larger rock fragments on the surface layer. Used as map unit phase designation for soils containing sufficient amounts of stones and boulders to impose important restrictions on use and management. These phases should not be confused with the use of fragments as textural modifiers. The four phases recognized in this survey are:

Stony (or bouldery).—The areas have enough stones and boulders at or near the surface to be a continuing nuisance during operations that mix the surface layer, but they do not make most such operations impractical. Conventional, wheeled vehicles can move with reasonable freedom over the area. Rocks may damage both the equipment that mixes the soil and the vehicles that move on the surface. Large rock fragments cover about 0.01 to 0.1 percent of the surface.

Very stony (or very bouldery).—The areas have so many stones and boulders at or near the surface that operations that mix the surface layer either require heavy equipment or use of implements that can operate between the larger ones. Tillage with conventionally powered farm equipment is impractical. Wheeled tractors and vehicles with high clearance can operate on carefully chosen routes over and around stones and boulders. Large rock fragments cover about 0.1 to 3 percent of the surface.

Extremely stony (or extremely bouldery).—The areas have so many stones and boulders at or near the surface that wheeled powered equipment, other than some special types, can operate only along selected routes. Tracked vehicles can be used in most places, although some routes have to be cleared. Large rock fragments cover about 3 to 15 percent of the surface.

Rubbly and very rubbly.—The areas have so many stones and boulders at or near the surface that tracked vehicles cannot be used in most places. Large rock fragments cover about 15 to 90 percent of the surface.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subaqueous. Refers to conditions and processes, features, or deposits that exist in or under water, especially fresh water, as in a lake or stream.

Subduction. The process of one lithospheric plate descending beneath another.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

- Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.
- Substratum.** The part of the soil below the solum.
- Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.
- Summer fallow.** The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.
- Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.
- Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."
- Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.
- Tailings.** Areas of washed ore left in uneven piles after placer mining activities such as sluicing, hydraulicing, or dredging.
- Talus.** Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.
- Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.
- Tectonic.** Pertaining to the forces involved in, or the resulting structures of, deformation of the earth's crust.
- Terminal moraine.** An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.
- Terrace** (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.
- Terrace.** (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.
- Terracettes.** Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.
- Terrane.** A group of related rocks and the area in which they are exposed at the earth's surface.
- Tertiary.** The period of geologic time from approximately 2 to 63 million years ago (radiometric dates). The earlier of the two geologic periods comprising the Cenozoic era.
- Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam,*

- silty clay loam, sandy clay, silty clay, and clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”
- Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.
- Thrust fault.** A fault with a dip of 45 degrees or less on which the hanging wall appears to have moved upward relative to the footwall.
- Till.** Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.
- Till plain.** An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.
- Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- Toeslope.** The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.
- Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.
- Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.
- Tread.** The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.
- Tuff.** A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.
- Udic.** A soil moisture regime common to a climate that has moisture throughout the year. The soil moisture control section is dry for less than 45 consecutive days during the 4 months following the summer solstice (Soil Survey Staff, 1999).
- Umbric epipedon.** A thick, dark-colored, humus-rich surface horizon that has low base saturation and pedogenic soil structure. It may include the upper part of the subsoil (Soil Survey Staff, 1999).
- Understory.** Plants in a forest community that grow to a height of 4.5 feet or less.
- Upland.** An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.
- Valley fill.** The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.
- Variation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.
- Varve.** A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.
- Water bars.** Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.
- Weathering.** All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by

atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Welded tuff. A glass-rich rock that has been indurated by the welding together of its glass shards under the combined action of the heat retained by particles, the weight of overlying material, and hot gasses.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Xeric. A soil moisture regime common to a climate having moist winters and dry summers. The soils are dry in the moisture control section for more than 45 consecutive days during the 4 months following the summer solstice and are moist for more than 45 consecutive days during the 4 months following the winter solstice (Soil Survey Staff, 1999).

Young forest stage. A forest successional stage in which the overstory vegetation of a stand is dominantly shade-intolerant successional trees. Trees generally are more than 9 inches in diameter at breast height, and the canopy cover exceeds 25 percent. Shade-tolerant climax tree species can be absent to nearly well represented (less than 50 percent).

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971 to 2000 at Ellensburg, Washington [2505

Month	Temperature										Preci-	
	Average		Average		Average		2 Years in		Average		2 years in	
	daily	minimum	daily	minimum	daily	minimum	Maximum	Minimum	number of	growing	will have	will have
							temperature	temperature	degree	days*	Less	More
							higher	lower			than--	than--
							than--	than--				
	° F	° F	° F	° F	° F	° F	° F	° F	Units	In	In	In
January	34.3	19.4	26.9	53	-10	3	1.21	0.48	1.			
February	41.6	23.4	32.5	58	-3	9	0.92	0.45	1.			
March	52.5	28.7	40.6	69	14	76	0.77	0.25	1.			
April	60.6	34.4	47.5	82	21	232	0.60	0.28	0.			
May	68.5	41.9	55.2	91	29	471	0.57	0.25	0.			
June	75.4	48.3	61.9	96	35	654	0.64	0.17	1.			
July	83.2	52.8	68.0	101	39	865	0.36	0.07	0.			
August	83.6	52.1	67.8	100	40	856	0.36	0.04	0.			
September	75.0	42.8	58.9	93	28	565	0.45	0.00	0.			
October	62.0	32.7	47.4	82	18	240	0.55	0.09	1.			
November	44.7	26.7	35.7	62	6	32	1.10	0.52	1.			
December	34.4	20.0	27.2	53	-6	2	1.47	0.52	2.			
Yearly:												
Average	59.7	35.3	47.5	---	---	---	---	---	---	---	---	---
Extreme	104.0	-28.0	---	102	-15	---	---	---	---	---	---	---
Total	---	---	---	---	---	4,005	9.01	6.61	10.			

Average number of days per year with at least 1 inch of snow on the ground: 42

*A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature threshold (usually 50 degrees F). Growth is minimal for the principal crops in the area (Threshold: 40 degrees F).

Soil Survey of Kittitas County Area, Washington

Table 2.---Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Ellensburg, Washington [2505])

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than----	April 21	May 4	May 25
2 years in 10 later than----	April 15	April 29	May 20
5 years in 10 later than----	April 5	April 19	May 9
First freezing temperature in fall:			
1 year in 10 earlier than---	October 8	September 25	September 15
2 years in 10 earlier than--	October 13	September 30	September 19
5 years in 10 earlier than--	October 23	October 9	September 26

Table 3.---Growing Season

(Recorded in the period 1971-2000 at Ellensburg, Washington [2505])

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	178	152	120
8 years in 10	186	159	127
5 years in 10	201	172	141
2 years in 10	217	185	155
1 year in 10	225	192	162

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
2	Saydab cobbly ashy loam, 0 to 25 percent slopes-----	11,900	1.0
3	Naxing ashy loam, 25 to 45 percent slopes-----	8,805	0.7
4	Naxing gravelly ashy loam, 45 to 65 percent slopes, stony-----	2,680	0.2
6	Ganis ashy silt loam, 7 to 25 percent slopes-----	2,778	0.2
8	Sapkin very cobbly loam, 45 to 75 percent slopes-----	1,524	0.1
9	Naxing ashy loam, 0 to 25 percent slopes-----	2,709	0.2
10	Anatone very cobbly loam, 5 to 25 percent slopes-----	2,702	0.2
10Y	Bocker very cobbly silt loam, 0 to 25 percent slopes-----	6,464	0.5
11	Sapkin-Rubble land complex, 30 to 75 percent slopes-----	15,275	1.2
12	Sapkin very cobbly loam, 10 to 45 percent slopes-----	5,357	0.4
13	Jumpe stony ashy loam, 5 to 25 percent slopes-----	21,131	1.7
14	Jumpe stony ashy loam, 25 to 45 percent north slopes-----	8,581	0.7
15	Stemilt ashy loam, 45 to 65 percent slopes-----	4,976	0.4
16	Stemilt-Rock outcrop complex, 25 to 75 percent slopes-----	2,549	0.2
18	Loneridge ashy loam, 0 to 25 percent slopes, stony-----	16,450	1.3
19	Darland very gravelly ashy loam, 30 to 70 percent slopes-----	2,398	0.2
20	Darland very gravelly ashy loam, moist, 30 to 70 percent slopes-----	1,362	0.1
24	Loneridge ashy loam, 25 to 45 percent north slopes, stony-----	1,433	0.1
27	Tekison stony loam, 0 to 25 percent slopes-----	6,814	0.6
28	Odo loam, 10 to 40 percent slopes-----	1,019	*
29	Stemilt very gravelly ashy loam, warm, 25 to 45 percent slopes-----	1,594	0.1
30	Stemilt ashy loam, 5 to 25 percent slopes-----	4,370	0.4
32	Stemilt ashy loam, 25 to 45 percent slopes-----	8,346	0.7
33	Bocker-Jumpe complex, 0 to 15 percent slopes-----	4,214	0.3
34	Bocker-Sapkin complex, 0 to 25 percent slopes-----	683	*
35	Bocker-Stemilt complex, 0 to 25 percent slopes-----	3,004	0.2
40	Rubble land-Rock outcrop complex, 10 to 90 percent slopes-----	16,561	1.3
41	Cliffdell gravelly ashy sandy loam, 5 to 30 percent slopes-----	679	*
42	Cliffdell gravelly ashy sandy loam, 30 to 60 percent slopes-----	4,110	0.3
48	Jumpe stony ashy loam, 45 to 65 percent north slopes-----	7,595	0.6
49	Jumpe stony ashy loam, 25 to 45 percent south slopes-----	10,759	0.9
50	Jumpe stony ashy loam, 45 to 65 percent south slopes-----	3,667	0.3
51	Jumpe-Rock outcrop complex, 30 to 70 percent north slopes-----	4,535	0.4
52	Loneridge ashy loam, 45 to 65 percent north slopes, stony-----	453	*
53	Loneridge ashy loam, 25 to 45 percent slopes, stony-----	13,112	1.1
53M	Tekison stony loam, 25 to 45 percent slopes-----	4,230	0.3
54	Loneridge ashy loam, 45 to 65 percent slopes, stony-----	4,587	0.4
54M	Tekison stony loam, 45 to 65 percent slopes-----	683	*
55	Shinn very cobbly ashy loam, 0 to 30 percent slopes-----	15,649	1.3
56	Shinn-Nint-Shushuskin complex, 0 to 25 percent slopes-----	7,963	0.6
57	Nard stony ashy loam, sandstone substratum, 30 to 60 percent slopes-----	1,113	*
62	Pachneum ashy loam, 30 to 60 percent slopes-----	273	*
64	Meystre loam, 0 to 15 percent slopes-----	787	*
65	Meystre stony loam, 15 to 45 percent slopes-----	223	*
66	Jumpmore gravelly ashy loam, 30 to 60 percent south slopes, stony-----	6,262	0.5
67	Jumpmore gravelly ashy loam, 30 to 60 percent north slopes, stony-----	5,416	0.4
69	Stirrup ashy sandy loam, sandstone substratum, 30 to 60 percent slopes---	1,415	0.1
70	McDaniel very stony ashy loam, 30 to 65 percent slopes-----	2,475	0.2
71	Kiper stony ashy sandy loam, 5 to 30 percent slopes-----	1,725	0.1
75	Yahne cobbly ashy loam, 5 to 30 percent slopes-----	1,711	0.1
76	Yahne cobbly ashy loam, 30 to 60 percent slopes-----	3,004	0.2
77	Ainsley stony ashy sandy loam, 30 to 60 percent slopes-----	251	*
78	Ainsley stony ashy sandy loam, 5 to 30 percent slopes-----	990	*
80	Cliffdell-Rock outcrop complex, 30 to 75 percent slopes-----	3,672	0.3
81	Terence gravelly ashy sandy loam, 0 to 30 percent slopes, stony-----	2,765	0.2
83	Terence gravelly ashy sandy loam, 30 to 60 percent slopes, stony-----	12,374	1.0
85	Spexarth ashy sandy loam, 30 to 60 percent slopes-----	3,008	0.2
86	Osborn ashy sandy loam, 30 to 60 percent south slopes-----	2,493	0.2
87	Osborn ashy sandy loam, 30 to 60 percent north slopes-----	1,002	*
89	Cryaquepts, 0 to 3 percent slopes-----	1,650	0.1
90	Bertolotti ashy sandy loam, 30 to 60 percent south slopes-----	2,126	0.2

See footnote at end of table.

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
91	Bertolotti ashy sandy loam, 30 to 60 percent north slopes-----	2,308	0.2
92	Rock outcrop-Bertolotti complex, 60 to 90 percent slopes-----	1,134	*
93	Bertolotti ashy sandy loam, 5 to 30 percent slopes-----	1,701	0.1
96	Terence gravelly ashy loam, cool, 30 to 60 percent slopes-----	448	*
97	Stilgar gravelly ashy sandy loam, 30 to 60 percent slopes-----	459	*
101	Standup very gravelly ashy sandy loam, 30 to 60 percent slopes-----	1,816	0.1
102	Standup very gravelly ashy sandy loam, 30 to 60 percent north slopes-----	1,407	0.1
104	Currier cobbly ashy sandy loam, 5 to 30 percent slopes-----	673	*
105	Currier cobbly ashy sandy loam, 30 to 60 percent slopes-----	2,849	0.2
106	Currier cobbly ashy sandy loam, 60 to 90 percent slopes-----	2,829	0.2
108	Jimek gravelly ashy sandy loam, 5 to 30 percent slopes-----	1,040	*
112	Natkin-Rock outcrop complex, 35 to 75 percent slopes-----	1,394	0.1
115	Jimek gravelly ashy sandy loam, 30 to 60 percent slopes-----	879	*
123	Kaner very gravelly ashy loam, 30 to 60 percent slopes-----	2,950	0.2
125	Bearrun ashy loam, 10 to 40 percent slopes-----	1,356	0.1
128	Kafing ashy sandy loam, 30 to 60 percent north slopes-----	573	*
129	Kafing ashy sandy loam, 30 to 60 percent south slopes-----	3,230	0.3
130	Brisky very cobbly loam, 30 to 60 percent slopes-----	694	*
131	Kladnick very stony ashy sandy loam, warm, 5 to 15 percent slopes-----	512	*
137	Dumps, mine-----	446	*
138	Pits, mine-----	753	*
139	Nard ashy loam, 0 to 3 percent slopes-----	2,808	0.2
141	Nard ashy loam, 25 to 45 percent north slopes-----	3,069	0.2
142	Scotties gravelly ashy sandy loam, sandy substratum, 45 to 75 percent north slopes-----	4,013	0.3
144	Nard ashy loam, 5 to 25 percent slopes-----	16,453	1.3
146	Nard ashy loam, 45 to 65 percent slopes-----	1,234	*
158	Kiper stony ashy sandy loam, 30 to 65 percent slopes-----	6,629	0.5
159	Ampad ashy sandy loam, 30 to 60 percent south slopes-----	5,826	0.5
160	Cumulic Haploxerolls, 0 to 3 percent slopes-----	1,789	0.1
161	Rock outcrop-----	24,709	2.0
162	Hakker clay loam, 0 to 15 percent slopes-----	1,990	0.2
163	Nard ashy loam, 45 to 65 percent north slopes-----	4,352	0.4
164	Nard ashy loam, 25 to 45 percent slopes-----	11,145	0.9
166	Ampad ashy sandy loam, warm, 5 to 30 percent slopes-----	1,616	0.1
167	Keechelus-Nard-Kafing complex, 30 to 60 percent south slopes-----	3,276	0.3
168	Keechelus-Nard-Kafing complex, 30 to 60 percent north slopes-----	1,587	0.1
170	Ampad ashy sandy loam, 5 to 30 percent slopes-----	1,782	0.1
175	Keechelus gravelly ashy loam, 5 to 30 percent slopes, stony-----	3,172	0.3
176	Keechelus gravelly ashy loam, 30 to 60 percent south slopes, stony-----	11,330	0.9
177	Keechelus gravelly ashy loam, 30 to 60 percent slopes north slopes, stony	3,793	0.3
180	Nimue ashy sandy loam, 5 to 30 percent slopes-----	2,424	0.2
181	Nimue ashy sandy loam, 30 to 60 percent slopes-----	11,745	1.0
182	Haywire ashy sandy loam, 0 to 30 percent slopes-----	244	*
183	Haywire ashy sandy loam, 30 to 60 percent slopes-----	1,891	0.2
185	Andic Dystrocryepts, 30 to 60 percent slopes-----	3,750	0.3
186	Stirrup-Rock outcrop complex, 30 to 70 percent slopes-----	1,548	0.1
187	Chinkmin ashy sandy loam, 5 to 30 percent slopes-----	6,591	0.5
188	Chinkmin ashy sandy loam, 30 to 60 percent slopes-----	10,591	0.9
190	Nimue-Rock outcrop complex, 30 to 60 percent slopes-----	1,664	0.1
191	Sutkin stony loam, 25 to 45 percent slopes-----	113	*
194	Osborn-Scotties-Chapot complex, 30 to 70 percent slopes-----	4,353	0.4
195	Scotties-Chapot-Rock outcrop complex, 45 to 75 percent slopes-----	3,543	0.3
201	Roslyn ashy sandy loam, 0 to 5 percent slopes-----	6,218	0.5
203	Teanaway ashy loam, 3 to 10 percent slopes-----	5,028	0.4
204	Teanaway ashy loam, 25 to 50 percent slopes-----	1,057	*
205	Xerofluvents, 0 to 5 percent slopes-----	7,100	0.6
206	Dystroxerepts, 45 to 65 percent south slopes-----	581	*
207	Quicksell loam, 0 to 5 percent slopes-----	2,684	0.2
208	Patnish-Mippon-Myzel complex, 0 to 3 percent slopes-----	10,577	0.9
210	Dystroxerepts, 50 to 70 percent north slopes-----	775	*

See footnote at end of table.

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
211	Teaway ash loam, 0 to 3 percent slopes-----	3,193	0.3
213	Roslyn ash sandy loam, moist, 3 to 25 percent slopes-----	2,915	0.2
214	Haplosaprists, 0 to 2 percent slopes-----	783	*
216	Roxer gravelly ash sandy loam, 45 to 65 percent slopes-----	6,604	0.5
217	Roxer gravelly ash sandy loam, 5 to 25 percent slopes-----	943	*
218	Bograp ash sandy loam, 25 to 45 percent slopes-----	1,604	0.1
220	Roxer complex, 45 to 65 percent slopes-----	602	*
222	Ampad ash sandy loam, 25 to 45 percent north slopes-----	1,563	0.1
226	Bograp ash sandy loam, 45 to 65 percent slopes-----	568	*
227	Jummer-Jumpmore-Rock outcrop complex, 45 to 65 percent slopes, stony-----	5,467	0.4
228	Natkim gravelly ash sandy loam, 25 to 45 percent slopes-----	2,857	0.2
229	Natkim gravelly ash sandy loam, 45 to 65 percent slopes-----	4,898	0.4
230	Rock outcrop-Roxer complex, 40 to 70 percent slopes-----	4,075	0.3
232	Vabus very stony ash sandy loam, 5 to 25 percent slopes-----	1,590	0.1
233	Natkim gravelly ash sandy loam, 5 to 25 percent slopes-----	2,162	0.2
234	Kladnick ash sandy loam, 3 to 8 percent slopes-----	571	*
237	Kladnick ash sandy loam, 0 to 3 percent slopes-----	4,328	0.4
238	Racker ash sandy loam, 0 to 5 percent slopes-----	2,882	0.2
241	Thetis ash sandy loam, 25 to 45 percent slopes-----	5,046	0.4
242	Roxer gravelly ash sandy loam, 25 to 45 percent slopes-----	1,676	0.1
251	Domerie-Rock outcrop complex, 40 to 70 percent slopes, stony-----	1,161	*
252	Domerie gravelly ash sandy loam, 30 to 65 percent south slopes, stony---	2,770	0.2
253	Domerie gravelly ash sandy loam, 30 to 65 percent north slopes, stony---	1,106	*
254	Kachess gravelly ash sandy loam, 5 to 25 percent slopes-----	7,011	0.6
255	Thetis ash sandy loam, 45 to 65 percent slopes-----	4,065	0.3
259	Fluvaquents, 0 to 2 percent slopes-----	1,101	*
262	Roslyn ash sandy loam, clay loam subsoil, 0 to 5 percent slopes-----	394	*
263	Volperie very paragravelly ash sandy loam, 5 to 30 percent slopes-----	515	*
264	Volperie very paragravelly ash sandy loam, 30 to 60 percent slopes-----	3,225	0.3
265	Volperie very paragravelly ash sandy loam, warm, 30 to 60 percent slopes	1,760	0.1
266	Volperie very paragravelly ash sandy loam, 30 to 60 percent north slopes	1,106	*
267	Esmeralda very gravelly ash loam, 10 to 30 percent slopes-----	436	*
268	Vitricryands, 30 to 70 percent slopes-----	1,661	0.1
270	Roxer-Deroux-Rock outcrop complex, 40 to 90 percent slopes-----	5,543	0.4
271	Roxer-Deroux complex, 30 to 70 percent slopes-----	4,594	0.4
272	Andic Dystraxepts-Rock outcrop complex, 40 to 70 percent slopes, stony	7,697	0.6
280	Esmeralda very gravelly ash loam, 40 to 70 percent slopes-----	1,183	*
281	Vanepps-Rock outcrop complex, 25 to 50 percent slopes, stony-----	3,062	0.2
284	Esmeralda very gravelly ash sandy loam, 45 to 70 percent slopes, bouldery-----	824	*
290	Andic Dystraxepts-Rock outcrop complex, 30 to 90 percent slopes-----	1,838	0.1
301	Vabus ash sandy loam, 0 to 25 percent slopes-----	1,707	0.1
302	Vabus ash sandy loam, 25 to 45 percent slopes-----	3,227	0.3
304	Madrak gravelly ash loam, 5 to 45 percent slopes-----	2,102	0.2
306	Vabus stony ash sandy loam, 5 to 25 percent slopes-----	2,532	0.2
308	Vabus stony ash sandy loam, 45 to 65 percent slopes-----	6,270	0.5
309	Vabus ash sandy loam, 45 to 65 percent slopes-----	9,655	0.8
313	Vabus stony ash sandy loam, 25 to 45 percent slopes-----	4,532	0.4
315	Lemah-Rock outcrop complex, 60 to 90 percent slopes-----	4,368	0.4
316	Cryorthents gravelly ash loam, 5 to 30 percent slopes, stony-----	530	*
317	Ronsel ash sandy loam, 45 to 65 percent slopes-----	3,212	0.3
318	Vabus very stony ash sandy loam, 25 to 45 percent slopes-----	3,424	0.3
319	Vabus very stony ash sandy loam, 45 to 65 percent south slopes-----	1,637	0.1
320	Vabus-Rock outcrop complex, 10 to 60 percent slopes-----	2,629	0.2
321	Andic Dystraxepts-Andic Haplocryods-Rock outcrop complex, 30 to 90 percent slopes-----	16,407	1.3
322	Vabus very stony ash sandy loam, 45 to 65 percent slopes-----	4,007	0.3
323	Cryorthents cobbly ash loam, 0 to 3 percent slopes-----	376	*
324	Ronsel gravelly ash loam, 5 to 30 percent slopes-----	1,105	*
328	Cryofluvents-Dystraxepts complex, 0 to 3 percent slopes-----	2,472	0.2
332	Stirrup ash sandy loam, 5 to 30 percent slopes-----	1,810	0.1

See footnote at end of table.

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
333	Stirrup ashy sandy loam, 30 to 65 percent slopes-----	11,099	0.9
334	Stirrup ashy sandy loam, 65 to 85 percent slopes-----	447	*
335	Vabus-Rock outcrop complex, 45 to 70 percent slopes-----	1,952	0.2
336	Ronsel stony ashy sandy loam, 30 to 60 percent slopes-----	1,327	0.1
338	Gilpar ashy sandy loam, 5 to 25 percent slopes-----	1,622	0.1
346	Gilpar ashy sandy loam, 25 to 45 percent slopes-----	4,019	0.3
347	Gilpar ashy sandy loam, 45 to 65 percent slopes-----	9,611	0.8
402	Esmeralda-Rock outcrop association, 35 to 65 percent slopes, bouldery----	4,765	0.4
404	Polallie-Rock outcrop complex, 30 to 65 percent slopes-----	4,145	0.3
405	Pollalie gravelly ashy sandy loam, cool, 10 to 35 percent slopes-----	430	*
406	Polallie gravelly ashy sandy loam, 35 to 65 percent slopes-----	7,385	0.6
408	Rock outcrop-Domerie complex, 60 to 75 percent slopes-----	1,356	0.1
409	Domerie gravelly ashy sandy loam, 45 to 65 percent slopes-----	1,599	0.1
410	Tanaha ashy loam, 0 to 2 percent slopes-----	1,179	*
411	Argabak very cobbly loam, 3 to 15 percent slopes-----	11,170	0.9
414	Argabak very cobbly loam, 15 to 30 percent slopes-----	1,018	*
415	Benwy silt loam, 5 to 10 percent slopes-----	1,247	0.1
417	Benwy silt loam, 30 to 45 percent slopes-----	237	*
422	Clerf very cobbly loam, 30 to 45 percent slopes-----	1,979	0.2
424	Cleman very fine sandy loam, 0 to 2 percent slopes-----	1,334	0.1
427	Clerf very cobbly loam, 15 to 30 percent slopes-----	1,451	0.1
429	Grinrod-Horseflat complex, 15 to 30 percent slopes-----	285	*
431	Grinrod-Horseflat-Rubble land complex, 30 to 75 percent slopes-----	849	*
433	Kiona-Rubble land complex, 30 to 75 percent slopes-----	421	*
434	Laufer-Theissen complex, 15 to 30 percent slopes-----	961	*
438	Blint very cobbly ashy loam, 45 to 60 percent slopes-----	9	*
440	Nitzel ashy silt loam, 0 to 2 percent slopes-----	1,037	*
450	Argixerolls-Durixerolls complex, 30 to 70 percent south slopes-----	1,491	0.1
452	Argabak-Zen-Grinrod complex, 3 to 15 percent slopes-----	1,546	0.1
456	Cheviot-Rubble land complex, 30 to 75 percent slopes-----	1,075	*
457	Cheviot very cobbly loam, 15 to 30 percent slopes-----	643	*
458	Clerf-Vantage-Cheviot complex, 30 to 60 percent slopes-----	1,078	*
460	Neviot-Palerf-Vantage complex, 30 to 60 percent slopes-----	1,530	0.1
461	Kiona very stony loam, 15 to 30 percent slopes-----	252	*
465	Horseflat very cobbly loam, 3 to 15 percent slopes-----	273	*
466	Benwy silt loam, 10 to 15 percent slopes-----	614	*
470	Weirman very cobbly sandy loam, 0 to 2 percent slopes-----	578	*
476	Ralock-Horseflat complex, 30 to 65 percent slopes-----	254	*
480	Nanum ashy loam, 0 to 2 percent slopes-----	2,975	0.2
481	Nanum ashy loam, 2 to 5 percent slopes-----	351	*
482	Rollinger ashy silt loam, 5 to 10 percent slopes-----	1,374	0.1
485	Rollinger ashy silt loam, 30 to 45 percent slopes-----	590	*
487	Rollinger ashy silt loam, 2 to 5 percent slopes-----	688	*
489	Rollinger ashy silt loam, 45 to 60 percent slopes-----	43	*
492	Rollinger ashy silt loam, 10 to 15 percent slopes-----	1,579	0.1
493	Rollinger ashy silt loam, 15 to 30 percent slopes-----	360	*
494	Caliralls silt loam, 10 to 15 percent slopes-----	114	*
495	Caliralls-Clerf complex, 15 to 30 percent slopes-----	346	*
497	Camaspach very cobbly loam, 3 to 15 percent slopes-----	3,787	0.3
498	Caliralls-Clerf complex, 30 to 45 percent slopes-----	314	*
500	Vantage very cobbly loam, 3 to 15 percent slopes-----	3,396	0.3
502	Vantage very cobbly loam, 15 to 30 percent slopes-----	2,866	0.2
503	Terlan-Durtash-Selah complex, 5 to 15 percent slopes-----	2,836	0.2
509	Vantage-Clerf complex, 30 to 70 percent slopes-----	13,648	1.1
511	Vantage-Clerf complex, 15 to 30 percent slopes-----	5,490	0.4
512	Vantage-Clerf complex, 3 to 15 percent slopes-----	3,026	0.2
513	Meloza-Cowiche complex, 15 to 30 percent slopes-----	513	*
516	Selah loam, 0 to 2 percent slopes-----	1,070	*
517	Selah loam, 5 to 10 percent slopes-----	4,907	0.4
519	Selah loam, 2 to 5 percent slopes-----	5,182	0.4
523	Terlan gravelly loam, 0 to 2 percent slopes-----	1,565	0.1

See footnote at end of table.

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
524	Terlan gravelly loam, 2 to 5 percent slopes-----	2,555	0.2
525	Terlan gravelly loam, 5 to 10 percent slopes-----	1,181	*
532	Selah-Terlan complex, 10 to 15 percent slopes-----	769	*
533	Selah loam, 15 to 30 percent slopes-----	5	*
535	Zen silt loam, 5 to 10 percent slopes-----	450	*
538	Zen silt loam, 10 to 15 percent slopes-----	988	*
539	Zen silt loam, 15 to 30 percent slopes-----	550	*
553	Ralock ashy silt loam, 30 to 45 percent slopes-----	13	*
554	Pachneum ashy loam, 2 to 5 percent slopes-----	562	*
557	Pachneum ashy loam, 15 to 30 percent slopes-----	1,376	0.1
558	Argixerolls-Durixerolls complex, 30 to 70 percent north slopes-----	893	*
561	Elkheights loam, 15 to 30 percent slopes-----	211	*
563	Mendian very fine sandy loam, 0 to 2 percent slopes-----	712	*
570	Wipple cobbly clay loam, 15 to 30 percent slopes-----	1,590	0.1
571	Wipple cobbly clay loam, 30 to 45 percent slopes-----	1,011	*
580	Woldale clay loam, 0 to 2 percent slopes-----	1,292	0.1
584	Varodale clay, 0 to 2 percent slopes-----	481	*
585	Varodale clay, 2 to 5 percent slopes-----	1,083	*
586	Vanderbilt ashy loam, moderately wet, 0 to 2 percent slopes-----	1,171	*
587	Argixerolls, 15 to 30 percent slopes-----	4,341	0.4
589	Nack-Brickmill complex, 0 to 5 percent slopes-----	1,147	*
590	Brickmill-Nanum complex, 0 to 5 percent slopes-----	7,174	0.6
592	Umtanum ashy silt loam, 2 to 5 percent slopes-----	349	*
593	Camaspatch-Whiskeydick complex, 3 to 15 percent slopes-----	1,392	0.1
594	Camaspatch-Whiskeydick complex, 15 to 30 percent slopes-----	3,537	0.3
595	Camaspatch-Whiskeydick complex, 30 to 70 percent slopes-----	7,840	0.6
598	Zillah silt loam, 0 to 2 percent slopes-----	502	*
601	Brickmill gravelly ashy loam, 0 to 2 percent slopes-----	4,876	0.4
602	Brickmill gravelly ashy loam, 2 to 5 percent slopes-----	631	*
603	Reeser ashy clay loam, 2 to 5 percent slopes-----	1,694	0.1
604	Reeser ashy clay loam, 5 to 10 percent slopes-----	1,349	0.1
605	Disage very cobbly loam, 15 to 30 percent slopes-----	294	*
606	Disage very cobbly loam, 3 to 15 percent slopes-----	1,076	*
607	Disage-Clenage complex, 30 to 60 percent slopes-----	494	*
609	Ackna ashy loam, 0 to 2 percent slopes-----	1,632	0.1
610	Ackna ashy loam, 2 to 5 percent slopes-----	390	*
612	Nitcha ashy loam, 0 to 2 percent slopes-----	658	*
614	Camaspatch very cobbly loam, 15 to 30 percent slopes-----	866	*
618	Nitzel ashy silt loam, gravelly substratum, 0 to 2 percent slopes-----	445	*
621	Mitta ashy silt loam, flooded, 0 to 2 percent slopes-----	1,495	0.1
622	Manastash loam, 0 to 2 percent slopes-----	992	*
623	Manastash loam, 2 to 5 percent slopes-----	1,049	*
624	Manastash loam, 5 to 10 percent slopes-----	696	*
625	Manastash-Durtash complex, 5 to 10 percent slopes-----	708	*
626	Manastash-Selah-Durtash complex, 15 to 30 percent slopes-----	587	*
632	Manastash loam, 10 to 15 percent slopes-----	415	*
633	Nack ashy loam, 0 to 2 percent slopes-----	2,076	0.2
634	Manastash-Durtash complex, 10 to 15 percent slopes-----	728	*
635	Opnish ashy loam, 0 to 2 percent slopes-----	6,070	0.5
637	Tanksel-Lainand complex, 15 to 30 percent slopes-----	252	*
638	Tanksel-Lainand-Camaspatch complex, 30 to 70 percent slopes-----	7,380	0.6
640	Elkheights loam, 5 to 10 percent slopes-----	515	*
644	Drino-Sohappy-Fortyday complex, 15 to 30 percent slopes-----	2,813	0.2
650	Tanksel-Patron-Camaspatch complex, 15 to 30 percent slopes-----	774	*
656	Tanksel-Patron-Camaspatch complex, 30 to 70 percent slopes-----	1,978	0.2
658	Camaspatch-Tanksel complex, 30 to 70 percent slopes-----	341	*
661	Drysel loam, 5 to 10 percent slopes-----	43	*
662	Ralock-Palerf complex, 15 to 30 percent slopes-----	1,721	0.1
663	Ralock-Palerf complex, 30 to 45 percent slopes-----	3,450	0.3
667	Laufer-Theissen complex, 30 to 45 percent slopes-----	7,761	0.6
668	Laufer-Theissen-Rubble land complex, 30 to 75 percent slopes-----	15,622	1.3

See footnote at end of table.

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
669	Argabak-Zen-Grinrod complex, 15 to 30 percent slopes-----	232	*
670	Argabak-Whiskeydick complex, 3 to 15 percent slopes-----	295	*
672	Argabak-Mozen complex, 3 to 15 percent slopes-----	5,924	0.5
674	Durtash gravelly loam, 3 to 10 percent slopes-----	1,316	0.1
684	Nitzel-Weirman complex, 2 to 5 percent slopes-----	458	*
693	Tanksel-Wockum complex, 15 to 30 percent slopes-----	1,553	0.1
695	Drino-Sohappy-Fortyday complex, 30 to 60 percent slopes-----	1,943	0.2
697	Wockum-Blint complex, 15 to 30 percent slopes-----	400	*
698	Wockum-Blint-Windry complex, 45 to 60 percent slopes-----	6	*
706	Kayak gravelly ashy loam, 0 to 2 percent slopes-----	1,348	0.1
712	Malaga cobbly sandy loam, 3 to 15 percent slopes-----	29	*
713	Malaga cobbly sandy loam, 15 to 30 percent slopes-----	75	*
715	Weirman gravelly sandy loam, 0 to 2 percent slopes-----	2,377	0.2
717	Fortyday-Drino-Nevo complex, 15 to 30 percent slopes-----	2,286	0.2
718	Fortyday-Drino-Nevo complex, 30 to 60 percent slopes-----	1,326	0.1
720	Nanum ashy sandy clay loam, 0 to 2 percent slopes-----	1,501	0.1
724	Manastash-Durtash complex, 2 to 5 percent slopes-----	1,013	*
725	Argabak-Vantage complex, 3 to 15 percent slopes-----	6,375	0.5
741	Vantage complex, 15 to 30 percent slopes-----	16	*
742	Drino-Fortyday complex, 15 to 30 percent slopes-----	470	*
744	Palerf-Vantage complex, 15 to 30 percent slopes-----	4,415	0.4
745	Zen-Benwy-Laric complex, 3 to 15 percent slopes-----	802	*
747	Palerf-Ralock-Vantage complex, 15 to 30 percent slopes-----	672	*
748	Malaga gravelly sandy loam, 2 to 5 percent slopes-----	196	*
751	Vantage-Clerf-Rubble land complex, 30 to 70 percent slopes-----	5,776	0.5
755	Nevo-Fortyday complex, 3 to 15 percent slopes-----	2,878	0.2
758	Sohappy-Fortyday complex, 3 to 15 percent slopes-----	25	*
772	Haploxerolls-Weirman-Aquolls complex, 0 to 5 percent slopes-----	848	*
774	Drino-Rubble land-Rock outcrop complex, 30 to 75 percent north slopes----	1,309	0.1
787	Terlan-Durtash-Selah complex, 2 to 5 percent slopes-----	3,348	0.3
789	Deedale clay loam, 0 to 2 percent slopes-----	612	*
790	Mitta ashy silt loam, 0 to 2 percent slopes-----	305	*
791	Mitta ashy silt loam, drained, 0 to 2 percent slopes-----	6,192	0.5
792	Brickmill gravelly ashy loam, 0 to 5 percent slopes-----	1,912	0.2
793	Zillah-Kayak complex, 0 to 2 percent slopes-----	646	*
794	Kayak-Weirman complex, 0 to 2 percent slopes-----	2,267	0.2
795	Nack-Opnish complex, 0 to 2 percent slopes-----	3,867	0.3
796	Brickmill-Nack complex, 0 to 2 percent slopes-----	769	*
797	Brysill ashy loam, 0 to 2 percent slopes-----	604	*
799	Brysill gravelly ashy loam, 0 to 2 percent slopes-----	311	*
800	Brysill gravelly ashy loam, 2 to 5 percent slopes-----	1,099	*
801	Brysill cobbly ashy loam, 0 to 2 percent slopes-----	1,524	0.1
802	Brysill cobbly ashy loam, 2 to 5 percent slopes-----	572	*
803	Brysill very cobbly ashy loam, 0 to 5 percent slopes-----	315	*
804	Benwy silt loam, 2 to 5 percent slopes-----	344	*
806	Weirman complex, channeled, 0 to 2 percent slopes-----	2,197	0.2
807	Brysill-Ackna complex, 0 to 2 percent slopes-----	652	*
809	Weirman-Kayak-Zillah complex, 0 to 2 percent slopes-----	700	*
814	Argixerolls, moist, 30 to 70 percent north slopes-----	2,206	0.2
815	Argixerolls, moist, 30 to 70 percent south slopes-----	2,151	0.2
816	Patron complex, landslide, 5 to 15 percent slopes-----	443	*
817	Manastash loam, 2 to 5 percent slopes-----	258	*
818	Umtanum ashy silt loam, 0 to 2 percent slopes-----	898	*
819	Millhouse cobbly ashy loam, 0 to 5 percent slopes-----	2,540	0.2
820	Modsel complex, 0 to 5 percent slopes-----	3,842	0.3
822	Reeser-Reelow-Sketter complex, 2 to 5 percent slopes-----	5,044	0.4
823	Millhouse cobbly ashy loam, 5 to 10 percent slopes-----	452	*
824	Pachneum ashy loam, 5 to 10 percent slopes-----	835	*
825	Pachneum ashy loam, 10 to 15 percent slopes-----	1,014	*
828	Swauk loam, 5 to 15 percent slopes-----	766	*
829	Swauk loam, 15 to 30 percent slopes-----	248	*

See footnote at end of table.

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
830	Swauk-Qualla complex, 5 to 15 percent slopes-----	689	*
831	Qualla loam, 0 to 5 percent slopes-----	587	*
832	Qualla loam, 5 to 15 percent slopes-----	327	*
833	Swauk loam, 0 to 5 percent slopes-----	202	*
835	Swauk-Qualla complex, 15 to 30 percent slopes-----	329	*
838	Nosal ashy silt loam, 0 to 2 percent slopes-----	1,254	0.1
839	Vanderbilt ashy loam, 0 to 2 percent slopes-----	1,151	*
841	Metser clay loam, 2 to 5 percent slopes-----	424	*
842	Durtash cobbly loam, 2 to 5 percent slopes-----	779	*
843	Reelow-Reeser-Sketter complex, 2 to 10 percent slopes-----	6,002	0.5
844	Metmill very gravelly ashy loam, 0 to 5 percent slopes-----	1,409	0.1
850	Reelow ashy clay loam, 2 to 5 percent slopes-----	332	*
852	Durtash loam, 2 to 5 percent slopes-----	446	*
853	Nint-McDaniel-Rubble land complex, 30 to 75 percent slopes-----	7,872	0.6
854	Shinn-Rubble land-Shushuskin complex, 5 to 15 percent slopes-----	1,046	*
855	Swauk-Elkheights-Lablue complex, 3 to 15 percent slopes-----	1,634	0.1
858	Shinn-Pachneum-Nint complex, 5 to 15 percent slopes-----	2,370	0.2
860	Laufer-Theissen complex, 5 to 15 percent slopes-----	576	*
862	Millhouse very cobbly ashy loam, 0 to 5 percent slopes-----	379	*
864	Reelow very cobbly ashy loam, clayey subsoil, 3 to 15 percent slopes-----	1,991	0.2
868	Reelow-Reeser-Lablue complex, 3 to 10 percent slopes-----	10,192	0.8
869	Weirman complex, drained, 0 to 5 percent slopes-----	1,880	0.2
870	Millhouse-Metser complex, 0 to 5 percent slopes-----	1,147	*
871	Sketter-Millhouse-Lablue complex, 0 to 5 percent slopes-----	782	*
872	Elkheights-Swauk complex, 5 to 15 percent slopes-----	884	*
873	Lablue-Sketter-Reelow complex, 3 to 15 percent slopes-----	4,002	0.3
875	Reeser-Sketter-Weirman complex, 3 to 15 percent slopes-----	1,089	*
877	Maxhill ashy loam, 0 to 5 percent slopes-----	2,507	0.2
878	Nint-Rubble land-Rock outcrop complex, 30 to 75 percent slopes-----	1,399	0.1
879	Patron complex, landslide, 15 to 45 percent slopes-----	1,862	0.2
880	Elkheights-Qualla complex, 5 to 15 percent slopes-----	622	*
882	Weirman-Kayak complex, 0 to 5 percent slopes-----	2,374	0.2
883	Nint-McDaniel-Laufer complex, 30 to 60 percent slopes-----	2,768	0.2
884	Maxhill very cobbly ashy loam, 0 to 5 percent slopes-----	514	*
885	Palerf-Ralock-Vantage complex, 30 to 70 percent slopes-----	2,516	0.2
886	Camaspatch-Rubble land-Whiskeydick complex, 30 to 70 percent slopes-----	2,403	0.2
887	Lainand-Blint-Rubble land, 30 to 70 percent slopes-----	763	*
889	Vantage-Palerf-Rubble land complex, 30 to 75 percent slopes-----	2,965	0.2
890	Camaspatch-Tanksel-Rubble land complex, 45 to 75 percent slopes-----	2,710	0.2
891	Tanksel-Rubble land-Rock outcrop complex, 30 to 70 percent slopes-----	1,781	0.1
892	Palerf-Rubble land-Rock outcrop complex, 30 to 70 percent slopes-----	2,579	0.2
893	Rubble land-Camaspatch-Rock outcrop complex, 30 to 70 percent slopes-----	1,872	0.2
894	Vantage-Clerf-Wipple complex, 15 to 30 percent slopes-----	1,631	0.1
896	Argabak-Camaspatch complex, 3 to 15 percent slopes-----	1,502	0.1
897	Nanum ashy loam, flooded, 0 to 2 percent slopes-----	471	*
898	Shinn-Laufer-Nint complex, 3 to 15 percent slopes-----	1,078	*
899	Bedron-Nint complex, 15 to 45 percent slopes-----	1,760	0.1
900	Deedale clay loam, flooded, 0 to 2 percent slopes-----	271	*
901	Niben-Vantage-Benwy complex, 15 to 30 percent slopes-----	2,148	0.2
902	Patron-Camaspatch complex, 15 to 30 percent slopes-----	1,450	0.1
903	Marlic-Zen-Laric complex, 3 to 15 percent slopes-----	6,366	0.5
905	Vantage-Niben-Clerf complex, 3 to 15 percent slopes-----	67	*
906	Levnik-Nosser-Nevo complex, 3 to 15 percent slopes-----	619	*
910	Winchester-Sagehill-Burbank complex, 5 to 30 percent slopes-----	183	*
911	Sagehill-Burbank-Malaga complex, 30 to 60 percent slopes-----	356	*
914	Disage-Clenage complex, 15 to 30 percent slopes-----	2,090	0.2
915	Nosser-Levnik complex, 3 to 15 percent slopes-----	863	*
916	Nosser-Levnik complex, 15 to 30 percent slopes-----	879	*
917	Nevo extremely gravelly sandy loam, 3 to 15 percent slopes-----	24	*
920	Esquatzel-Aquolls-Weirman complex, 0 to 5 percent slopes-----	179	*
921	Fortyday-Nevo-Rock outcrop complex, 3 to 15 percent slopes-----	3,000	0.2

See footnote at end of table.

Soil Survey of Kittitas County Area, Washington

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
922	Drino-Fortyday complex, 3 to 15 percent slopes-----	1,739	0.1
923	Timmerman-Sagehill complex, 3 to 15 percent slopes-----	977	*
924	Malaga stony sandy loam, 3 to 15 percent slopes-----	3,510	0.3
927	Disage-Sohappy-Clenage complex, 15 to 30 percent slopes-----	506	*
928	Mozen-Argabak-Yrtneg complex, 15 to 30 percent north slopes-----	685	*
929	Neviot-Palerf-Rubble land complex, 30 to 75 percent slopes-----	1,419	0.1
932	Volinger-Mozen complex, 15 to 30 percent slopes-----	245	*
933	Mozen-Volinger-Yrtneg complex, 5 to 15 percent slopes-----	2,228	0.2
936	Shushuskin-Pachneum-Shinn complex, 3 to 15 percent north slopes-----	2,212	0.2
940	Renslow silt loam, 5 to 10 percent slopes-----	630	*
941	Renslow silt loam, 10 to 15 percent slopes-----	193	*
944	Rubble land-Fortyday-Rock outcrop complex, 40 to 90 percent slopes-----	6,751	0.5
948	Hardmauk-Teaway complex, 25 to 50 percent slopes-----	1,992	0.2
954	Esquatzel silt loam, 0 to 2 percent slopes-----	297	*
955	Esquatzel-Weirman complex, 0 to 2 percent slopes-----	764	*
957	Kayak-Weirman complex, rarely flooded, 0 to 2 percent slopes-----	319	*
958	Grinrod-Horseflat complex, 45 to 60 percent slopes-----	102	*
960	Winchester-Burbank-Malaga complex, 30 to 60 percent slopes-----	441	*
963	Dumps, landfill-----	83	*
966	Ellisforde silt loam, 8 to 15 percent slopes-----	93	*
980	Rock Creek very stony silt loam, 0 to 30 percent slopes-----	173	*
981	Taneum loam, 5 to 15 percent slopes-----	136	*
1006	Rock outcrop-Rubble land-Glaciers, icefields complex, 30 to 90 percent slopes-----	19,222	1.6
1007	Rock outcrop-Andic Humicryods complex, 30 to 90 percent slopes-----	9,172	0.7
1441	Teaway ashy loam, 10 to 25 percent slopes-----	8,209	0.7
6710	McDaniel very stony ashy loam, 3 to 30 percent slopes-----	1,129	*
DAM	Dam-----	11	*
W	Water-----	21,229	1.7
	Total-----	1,236,263	100.0

* Less than 0.1 percent.

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
2: Saydab-----	6s	---
3: Naxing-----	7e	---
4: Naxing-----	7s	---
6: Ganis-----	6e	---
8: Sapkin-----	7e	---
9: Naxing-----	6e	---
10: Anatone-----	7s	---
10Y: Bocker-----	7s	---
11: Sapkin-----	7e	---
Rubble land-----	8	---
12: Sapkin-----	7e	---
13: Jumpe-----	6s	---
14: Jumpe-----	7s	---
15: Stemilt-----	7e	---
16: Stemilt-----	7e	---
Rock outcrop-----	8s	---
18: Loneridge-----	4e	---
19: Darland-----	7s	---
20: Darland, moist-----	7e	---
24: Loneridge, north slopes-----	7e	---
27: Tekison-----	6s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
28: Odo-----	4e	---
29: Stemilt, warm-----	7e	---
30: Stemilt-----	4e	---
32: Stemilt-----	7e	---
33: Bocker-----	7s	---
Jumpe-----	6s	---
34: Bocker-----	7s	---
Sapkin-----	6s	---
35: Bocker-----	7s	---
Stemilt-----	4e	---
40: Rubble land-----	8	---
Rock outcrop-----	8s	---
41: Cliffdell-----	4e	---
42: Cliffdell-----	7e	---
48: Jumpe, north slopes-----	7s	---
49: Jumpe, south slopes-----	7s	---
50: Jumpe, south slopes-----	7s	---
51: Jumpe-----	7s	---
Rock outcrop-----	8s	---
52: Loneridge, north slopes-----	7e	---
53: Loneridge, south slopes-----	7e	---
53M: Tekison-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
54: Loneridge, south slopes-----	7e	---
54M: Tekison-----	7e	---
55: Shinn-----	7s	---
56: Shinn-----	7s	---
Nint-----	6e	---
Shushuskin-----	3e	---
57: Nard, sandstone substratum-----	7s	---
62: Pachneum-----	7e	---
64: Meystre-----	3e	---
65: Meystre-----	7e	---
66: Jumpmore, south slopes, stony surface-----	7e	---
67: Jumpmore, north slopes-----	7e	---
69: Stirrup-----	7e	---
70: McDaniel-----	7e	---
71: Kiper-----	4e	---
75: Yahne-----	4e	---
76: Yahne-----	7e	---
77: Ainsley-----	7s	---
78: Ainsley-----	6s	---
80: Cliffdell-----	7e	---
Rock outcrop-----	8s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
81: Terence-----	6s	---
83: Terence-----	7s	---
85: Spexarth-----	7e	---
86: Osborn, south slopes-----	7e	---
87: Osborn, north slopes-----	7e	---
89: Cryaquepts-----	6w	---
90: Bertolotti, south slopes-----	7e	---
91: Bertolotti, north slopes-----	7e	---
92: Rock outcrop-----	8s	---
Bertolotti-----	7e	---
93: Bertolotti-----	4e	---
96: Terence-----	7e	---
97: Stilgar-----	7e	---
101: Standup-----	7e	---
102: Standup, north slopes-----	7e	---
104: Currier-----	6e	---
105: Currier-----	7e	---
106: Currier-----	7e	---
108: Jimek-----	7e	---
112: Natkim-----	7e	---
Rock outcrop-----	8s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
115: Jimek-----	7e	---
123: Kaner-----	7e	---
125: Bearrun-----	4e	---
128: Kafing, north slopes-----	7e	---
129: Kafing, south slopes-----	7e	---
130: Brisky-----	7s	---
131: Kladnick, warm-----	6s	---
137: Dumps, mine-----	8	---
138: Pits, mine-----	8	---
139: Nard-----	3c	---
141: Nard-----	7e	---
142: Scotties-----	7e	---
144: Nard-----	4e	---
146: Nard-----	7e	---
158: Kiper-----	7e	---
159: Ampad, south slopes-----	7e	---
160: Cumulic Haploxerolls-----	4c	4c
161: Rock outcrop-----	8s	---
162: Hakker-----	4w	---
163: Nard, north slopes-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
164: Nard-----	7e	---
166: Ampad, warm-----	4e	---
167: Keechelus, south slopes-----	7s	---
Nard-----	7e	---
Kafing, south slopes-----	7e	---
168: Keechelus, north slopes-----	7s	---
Nard-----	7e	---
Kafing, north slopes-----	7e	---
170: Ampad-----	4e	---
175: Keechelus-----	6s	---
176: Keechelus, south slopes-----	7s	---
177: Keechelus, north slopes-----	7s	---
180: Nimue-----	6e	---
181: Nimue-----	7e	---
182: Haywire-----	6e	---
183: Haywire-----	7e	---
185: Andic Dystrocryepts-----	7s	---
186: Stirrup-----	7e	---
Rock outcrop-----	8s	---
187: Chinkmin-----	6e	---
188: Chinkmin-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
190:		
Nimue-----	7e	---
Rock outcrop-----	8s	---
191:		
Sutkin-----	7e	---
194:		
Osborn-----	7e	---
Scotties-----	7e	---
Chapot-----	7e	---
195:		
Scotties-----	7e	---
Chapot-----	7e	---
Rock outcrop-----	8s	---
201:		
Roslyn-----	3c	---
203:		
Teanaway-----	3e	4e
204:		
Teanaway-----	7e	---
205:		
Xerofluvents-----	4s	---
206:		
Dystroxerepts, south slopes-----	7e	---
207:		
Quicksell-----	4w	4w
208:		
Patnish-----	3c	3c
Mippon-----	4s	---
Myzel-----	3w	3w
210:		
Dystroxerepts-----	7e	---
211:		
Teanaway-----	3c	3c
213:		
Roslyn, moist-----	4e	---
214:		
Haplosaprists-----	5w	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
216: Roxer-----	7e	---
217: Roxer-----	6e	---
218: Bograp-----	7e	---
220: Roxer, basalt substratum-----	7e	---
Roxer-----	7e	---
222: Ampad, north slopes-----	7e	---
226: Bograp-----	7e	---
227: Jummer-----	7e	---
Jumpmore-----	7e	---
Rock outcrop-----	8s	---
228: Natkim-----	7e	---
229: Natkim-----	7e	---
230: Rock outcrop-----	8s	---
Roxer-----	7e	---
232: Vabus-----	6e	---
233: Natkim-----	6e	---
234: Kladnick-----	6e	---
237: Kladnick-----	6s	---
238: Racker-----	3s	---
241: Thetis-----	7e	---
242: Roxer-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
251: Domerie, stony surface-----	7s	---
Rock outcrop-----	8s	---
252: Domerie, south slopes, stony surface-----	7s	---
253: Domerie, north slopes, stony surface-----	7s	---
254: Kachess-----	6e	---
255: Thetis-----	7e	---
259: Fluvaquents-----	5w	---
262: Roslyn, clay loam subsoil-----	3c	---
263: Volperie-----	4e	---
264: Volperie-----	7e	---
265: Volperie, warm-----	7e	---
266: Volperie, north slopes-----	7e	---
267: Esmeralda, moist-----	6e	---
268: Vitricryands-----	7e	---
270: Roxer-----	7e	---
Deroux-----	7e	---
Rock outcrop-----	8s	---
271: Roxer-----	7e	---
Deroux-----	7e	---
272: Andic Dystroxerepts-----	7e	---
Rock outcrop-----	8s	---
280: Esmeralda-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
281:		
Vanepps-----	7s	---
Rock outcrop-----	8s	---
284:		
Esmeralda, bouldery surface-----	7s	---
290:		
Andic Dystrocryepts-----	7s	---
Rock outcrop-----	8s	---
301:		
Vabus-----	6e	---
302:		
Vabus-----	7e	---
304:		
Madrak-----	7e	---
306:		
Vabus-----	6e	---
308:		
Vabus-----	7e	---
309:		
Vabus-----	7e	---
313:		
Vabus-----	7e	---
315:		
Lemah-----	7s	---
Rock outcrop-----	8s	---
316:		
Cryorthents-----	6s	---
317:		
Ronsel-----	7e	---
318:		
Vabus-----	7e	---
319:		
Vabus, south slopes-----	7e	---
320:		
Vabus-----	7e	---
Rock outcrop-----	8s	---
321:		
Andic Dystrocryepts, avalanche chute-----	7s	---
Andic Haplocryods-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
321: Rock outcrop-----	8s	---
322: Vabus-----	7s	---
323: Cryorthents, cool-----	7s	---
324: Ronsel-----	6e	---
328: Cryofluvents-----	6s	---
Dystrocryepts-----	6s	---
332: Stirrup-----	6e	---
333: Stirrup-----	7e	---
334: Stirrup-----	7e	---
335: Vabus-----	7e	---
Rock outcrop-----	8s	---
336: Ronsel-----	7s	---
338: Gilpar-----	6e	---
346: Gilpar-----	7e	---
347: Gilpar-----	7e	---
402: Esmeralda, bouldery surface-----	7s	---
Rock outcrop-----	8s	---
404: Polallie-----	7s	---
Rock outcrop-----	8s	---
405: Polallie-----	6s	---
406: Polallie-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
408: Rock outcrop-----	8s	---
Domerie-----	7s	---
409: Domerie, warm-----	7e	---
410: Tanaha-----	3s	3s
411: Argabak-----	7s	---
414: Argabak-----	7s	---
415: Benwy-----	3e	4e
417: Benwy-----	7e	---
422: Clerf-----	7e	---
424: Cleman-----	3e	2e
427: Clerf-----	4e	---
429: Grinrod-----	4e	---
Horseflat-----	7s	---
431: Grinrod-----	7e	---
Horseflat-----	7s	---
Rubble land-----	8s	---
433: Kiona-----	7s	---
Rubble land-----	8	---
434: Laufer-----	7s	---
Thiessen-----	7e	---
438: Blint-----	7s	---
440: Nitzel-----	3w	3w

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
450:		
Argixerolls, south slopes-----	7e	---
Durixerolls, south slopes-----	7e	---
452:		
Argabak-----	7s	---
Zen-----	4e	---
Grinrod-----	4s	---
456:		
Cheviot-----	7e	---
Rubble land-----	8	---
457:		
Cheviot-----	7s	---
458:		
Clerf-----	7e	---
Vantage-----	7s	---
Cheviot-----	7e	---
460:		
Neviot-----	7e	---
Palerf-----	7e	---
Vantage-----	7s	---
461:		
Kiona-----	6e	---
465:		
Horseflat-----	7s	---
466:		
Benwy-----	3e	4e
470:		
Weirman-----	4s	---
476:		
Ralock-----	7e	---
Horseflat-----	7s	---
480:		
Nanum-----	3w	3w
481:		
Nanum-----	3w	3w
482:		
Rollinger-----	3e	3e

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
485: Rollinger-----	7e	---
487: Rollinger-----	3e	2e
489: Rollinger-----	7e	---
492: Rollinger-----	3e	4e
493: Rollinger-----	4e	---
494: Caliralls-----	4e	4e
495: Caliralls-----	4e	6e
Clerf-----	7e	---
497: Camaspatch-----	7s	---
498: Caliralls-----	7e	---
Clerf-----	7e	---
500: Vantage-----	7s	---
502: Vantage-----	7s	---
503: Terlan-----	6s	6s
Durtash-----	7s	6s
Selah-----	3e	4e
509: Vantage-----	7s	---
Clerf-----	7e	---
511: Vantage-----	7s	---
Clerf-----	4e	---
512: Vantage-----	7s	---
Clerf-----	4s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
513: Meloza-----	4e	---
Cowiche-----	4e	6e
516: Selah-----	3s	3s
517: Selah-----	3e	4e
519: Selah-----	3s	3s
523: Terlan-----	6s	6s
524: Terlan-----	6s	6s
525: Terlan-----	6s	6s
532: Selah-----	3e	4e
Terlan-----	6s	6s
533: Selah-----	4e	6e
535: Zen-----	4e	3e
538: Zen-----	4e	4e
539: Zen-----	6e	---
553: Ralock-----	7e	---
554: Pachneum-----	2e	2e
557: Pachneum-----	4e	6e
558: Argixerolls, north slopes-----	7e	---
Durixerolls, north slopes-----	7e	---
561: Elkheights-----	4e	---
563: Mendian-----	2c	2c

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
570: Wipple-----	4e	6e
571: Wipple-----	7e	---
580: Woldale-----	3w	3w
584: Varodale-----	3s	3s
585: Varodale-----	3s	3s
586: Vanderbilt, moderately wet-----	3w	3w
587: Argixerolls-----	4e	6e
589: Nack-----	4w	4w
Brickmill-----	3w	3w
590: Brickmill-----	3w	3w
Nanum-----	3w	3w
592: Umtanum-----	3e	2e
593: Camaspatch-----	7s	---
Whiskeydick-----	6s	---
594: Camaspatch-----	7s	---
Whiskeydick-----	6s	---
595: Camaspatch-----	7s	---
Whiskeydick-----	7s	---
598: Zillah-----	3w	---
601: Brickmill-----	3w	3w
602: Brickmill-----	3w	3w
603: Reeser-----	3s	3s

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
604: Reeser-----	3e	4e
605: Disage-----	7s	---
606: Disage-----	7s	---
607: Disage-----	7s	---
Clenage-----	7e	---
609: Ackna-----	3c	2c
610: Ackna-----	3e	2e
612: Nitcha-----	3c	2c
614: Camaspatch-----	7s	---
618: Nitzel, gravelly substratum-----	3w	3w
621: Mitta, flooded-----	3w	3w
622: Manastash-----	3s	3s
623: Manastash-----	3s	3s
624: Manastash-----	3e	4e
625: Manastash-----	3e	4e
Durtash-----	7s	6s
626: Manastash-----	4e	3e
Selah-----	4e	6e
Durtash-----	7s	6s
632: Manastash-----	4e	3e
633: Nack-----	4w	4w

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
634:		
Manastash-----	3s	3s
Durtash-----	7s	6s
635:		
Opnish-----	3w	3w
637:		
Tanksel-----	4e	---
Lainand-----	4e	---
638:		
Tanksel-----	7e	---
Lainand-----	7e	---
Camaspatch-----	7s	---
640:		
Elkheights-----	3e	---
644:		
Drino-----	6e	---
Sohappy-----	4e	---
Fortyday-----	7s	---
650:		
Tanksel-----	4e	---
Patron-----	4e	---
Camaspatch-----	7s	---
656:		
Tanksel-----	7e	---
Patron-----	7e	---
Camaspatch-----	7s	---
658:		
Camaspatch-----	7s	---
Tanksel-----	7e	---
661:		
Drysel-----	3e	---
662:		
Ralock-----	4e	---
Palerf-----	6e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
663:		
Ralock-----	7e	---
Palerf-----	7e	---
667:		
Laufer-----	7s	---
Thiessen-----	7e	---
668:		
Laufer-----	7s	---
Thiessen-----	7e	---
Rubble land-----	8	---
669:		
Argabak-----	7s	---
Zen-----	6e	---
Grinrod-----	4e	---
670:		
Argabak-----	7s	---
Whiskeydick-----	6e	4e
672:		
Argabak-----	7s	---
Mozen-----	3e	---
674:		
Durtash, gravelly-----	7s	6s
684:		
Nitzel-----	3e	3e
Weirman-----	4s	4s
693:		
Tanksel-----	4e	---
Wockum-----	4e	---
695:		
Drino-----	7e	---
Sohappy-----	7e	---
Fortyday-----	7s	---
697:		
Wockum-----	4e	---
Blint-----	6e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
698:		
Wockum-----	7e	---
Blint-----	7s	---
Windry-----	7s	---
706:		
Kayak-----	3w	3w
712:		
Malaga-----	6s	4s
713:		
Malaga-----	6s	---
715:		
Weirman-----	4s	4s
717:		
Fortyday-----	7s	---
Drino-----	6e	---
Nevo-----	7s	---
718:		
Fortyday-----	7s	---
Drino-----	7e	---
Nevo-----	7s	---
720:		
Nanum-----	3w	3w
724:		
Manastash-----	3s	3s
Durtash-----	7s	6s
725:		
Argabak-----	7s	---
Vantage-----	7s	---
741:		
Vantage-----	7s	---
Vantage, thin surface-----	7s	---
742:		
Drino-----	6e	---
Fortyday-----	7s	---
744:		
Palerf-----	6e	---
Vantage-----	7s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
745:		
Zen-----	4e	4e
Benwy-----	3e	---
Laric-----	7s	---
747:		
Palerf-----	6e	---
Ralock-----	4e	---
Vantage-----	7s	---
748:		
Malaga-----	6s	4s
751:		
Vantage-----	7s	---
Clerf-----	7e	---
Rubble land-----	8	---
755:		
Nevo-----	7s	---
Fortyday-----	7s	---
758:		
Sohappy-----	4e	---
Fortyday-----	7s	---
772:		
Haploxerolls-----	6e	---
Weirman-----	4w	---
Aquolls-----	5w	---
774:		
Drino-----	7e	---
Rubble land-----	8	---
Rock outcrop-----	8s	---
787:		
Terlan-----	6s	6s
Durtash-----	7s	6s
Selah-----	3s	3s
789:		
Deedale-----	4w	4w
790:		
Mitta-----	2w	2w

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
791: Mitta, drained-----	2w	2w
792: Brickmill-----	3w	3w
793: Zillah-----	3w	---
Kayak-----	3w	3w
794: Kayak-----	3w	3w
Weirman-----	4s	4s
795: Nack-----	4w	4w
Opnish-----	3w	3w
796: Brickmill-----	3w	3w
Nack-----	4w	4w
797: Brysill-----	2s	2s
799: Brysill-----	2s	2s
800: Brysill-----	3e	3e
801: Brysill-----	3s	3s
802: Brysill-----	3s	3s
803: Brysill-----	4s	4s
804: Benwy-----	2e	2e
806: Weirman, very gravelly sandy loam-----	4s	4s
Weirman, very cobbly sandy loam-----	4w	---
807: Brysill-----	3s	3s
Ackna-----	3c	2c
809: Weirman-----	4s	4s

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
809:		
Kayak-----	3w	3w
Zillah-----	3w	---
814:		
Argixerolls, moist, north slopes-----	7e	---
815:		
Argixerolls, moist, south slopes-----	7e	---
816:		
Patron, cobbly ashy silt loam-----	3e	---
Patron-----	3e	---
817:		
Manastash-----	3s	3s
818:		
Umtanum-----	3c	2c
819:		
Millhouse-----	3s	3s
820:		
Modsel, ashy loam-----	2e	2e
Modsel, cobbly ashy loam-----	3s	3s
822:		
Reeser-----	3s	3s
Reelow-----	6s	6s
Sketter-----	4s	4s
823:		
Millhouse-----	4s	4e
824:		
Pachneum-----	3e	4e
825:		
Pachneum-----	3e	4e
828:		
Swauk-----	3e	---
829:		
Swauk-----	4e	---
830:		
Swauk-----	3e	---
Qualla-----	3e	---
831:		
Qualla-----	3s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
832: Qualla-----	3e	---
833: Swauk-----	3s	---
835: Swauk-----	4e	---
Qualla-----	4e	---
838: Nosal-----	3w	3w
839: Vanderbilt-----	3c	2c
841: Metser-----	4e	3w
842: Durtash-----	7s	6s
843: Reelow-----	6s	6s
Reeser-----	3e	4e
Sketter-----	4s	4e
844: Metmill, very gravelly ashy loam-----	6s	4w
850: Reelow-----	6s	6s
852: Durtash-----	6s	6s
853: Nint-----	7e	---
McDaniel-----	7e	---
Rubble land-----	8	---
854: Shinn-----	7s	---
Rubble land-----	8	---
Shushuskin-----	3e	---
855: Swauk-----	3e	---
Elkheights-----	3e	---
Lablue-----	7s	7s

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
858:		
Shinn-----	7s	---
Pachneum-----	3e	4e
Nint-----	6s	---
860:		
Laufer-----	7s	---
Thiessen-----	7e	---
862:		
Millhouse-----	4s	---
864:		
Reelow-----	6s	---
868:		
Reelow-----	6s	---
Reeser-----	4s	4e
Lablue-----	7s	7s
869:		
Weirman, very gravelly sandy loam-----	4s	---
Weirman, very cobbly sandy loam-----	4w	---
870:		
Millhouse-----	3s	3s
Metser-----	4e	3w
871:		
Sketter-----	4s	4s
Millhouse-----	3s	3s
Lablue-----	7s	7s
872:		
Elkheights-----	3e	---
Swauk-----	3e	---
873:		
Lablue-----	7s	7s
Sketter-----	4s	4e
Reelow-----	6s	---
875:		
Reeser-----	4s	4s
Sketter-----	4s	4e
Weirman-----	4w	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
877: Maxhill-----	2e	2e
878: Nint-----	7e	---
Rubble land-----	8	---
Rock outcrop-----	8s	---
879: Patron, cobbly ashy silt loam-----	7e	---
Patron-----	7e	---
880: Elkheights-----	3e	---
Qualla-----	3e	---
882: Weirman, very gravelly sandy loam-----	4s	4s
Weirman, very cobbly sandy loam-----	4w	---
Kayak-----	3w	3w
883: Nint-----	7e	---
McDaniel-----	7e	---
Laufer-----	7s	---
884: Maxhill-----	4s	---
885: Palerf-----	7e	---
Ralock-----	7e	---
Vantage-----	7s	---
886: Camaspatch-----	7s	---
Rubble land-----	8	---
Whiskeydick-----	7s	---
887: Lainand-----	7e	---
Blint-----	7s	---
Rubble land-----	8	---
889: Vantage-----	7s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
889:		
Palerf-----	7e	---
Rubble land-----	8	---
890:		
Camaspatch-----	7s	---
Tanksel-----	7e	---
Rubble land-----	8	---
891:		
Tanksel-----	7e	---
Rubble land-----	8	---
Rock outcrop-----	8s	---
892:		
Palerf-----	7e	---
Rubble land-----	8	---
Rock outcrop-----	8s	---
893:		
Rubble land-----	8	---
Camaspatch-----	7s	---
Rock outcrop-----	8s	---
894:		
Vantage-----	7s	---
Clerf-----	4e	---
Wipple-----	4e	6e
896:		
Argabak-----	7s	---
Camaspatch-----	7s	---
897:		
Nanum, flooded-----	3w	3w
898:		
Shinn-----	7s	---
Laufer-----	7s	---
Nint-----	6e	---
899:		
Bedron-----	4e	---
Nint-----	7e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
900: Deedale, flooded-----	4w	4w
901: Niben-----	4e	---
Vantage-----	7s	---
Benwy-----	4e	6e
902: Patron-----	4e	---
Camaspatch-----	7s	---
903: Marlic-----	6e	4e
Zen-----	4e	4e
Laric-----	7s	---
905: Vantage-----	7s	---
Niben-----	3e	---
Clerf-----	4s	---
906: Levnik-----	6s	---
Nosser-----	4e	---
Nevo-----	7s	---
910: Winchester-----	7e	---
Sagehill-----	6e	---
Burbank-----	7e	---
911: Sagehill-----	7e	---
Burbank-----	7e	---
Malaga-----	7e	---
914: Disage-----	7s	---
Clenage-----	6e	---
915: Nosser-----	4e	---
Levnik-----	6s	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
916:		
Nosser-----	4e	---
Levnik-----	6s	---
917:		
Nevo-----	7s	---
920:		
Esquatzel-----	3e	2e
Aquolls-----	5w	---
Weirman-----	4s	---
921:		
Fortyday-----	7s	---
Nevo-----	7s	---
Rock outcrop-----	8s	---
922:		
Drino-----	6s	---
Fortyday-----	7s	---
923:		
Timmerman-----	6e	4e
Sagehill-----	6e	3e
924:		
Malaga, stony sandy loam-----	6s	6s
927:		
Disage-----	7s	---
Sohappy-----	4e	---
Clenage-----	7e	---
928:		
Mozen-----	4e	---
Argabak-----	7s	---
Yrtneg-----	6s	---
929:		
Neviot-----	7e	---
Palerf-----	7e	---
Rubble land-----	8	---
932:		
Volinger-----	4e	---
Mozen-----	4e	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
933:		
Mozen-----	3e	---
Volinger-----	3e	---
Yrtneg-----	6s	---
936:		
Shushuskin-----	3e	---
Pachneum-----	3e	4e
Shinn-----	7s	---
940:		
Renslow-----	3e	3e
941:		
Renslow-----	3e	4e
944:		
Rubble land-----	8	---
Fortyday-----	7s	---
Rock outcrop-----	8s	---
948:		
Hardmauk-----	7e	---
Teanaway-----	7e	---
954:		
Esquatzel-----	3w	3w
955:		
Esquatzel-----	3c	2c
Weirman-----	4s	---
Weirman, very cobbly sandy loam-----	4s	---
957:		
Kayak, rarely flooded-----	3w	3w
Weirman, rarely flooded-----	4s	4s
958:		
Grinrod-----	7e	---
Horseflat-----	7s	---
960:		
Winchester-----	7e	---
Burbank-----	7e	---
Malaga-----	7e	---
963:		
Dumps, landfill-----	8	---

Soil Survey of Kittitas County Area, Washington

Table 5.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
966: Ellisforde-----	3e	4e
980: Rock Creek-----	7s	---
981: Taneum-----	3e	---
1006: Rock outcrop-----	8s	---
Rubble land-----	8	---
Glaciers, icefields-----	8w	---
1007: Rock outcrop-----	8s	---
Andic Humicryods-----	7s	---
1441: Teanaway-----	3e	4e
6710: McDaniel-----	6s	---
DAM: Dam-----	8	---
W: Water-----	---	---

Table 6.--Prime and other Important Farmland

(Only the soils considered prime or important farmland are listed. Urban or built-up listed are not considered prime or important farmland.)

Map symbol	Map unit name	Farmland class
56	Shinn-Nint-Shushuskin complex, 0 to 25 percent slopes	Farmland of statewide
64	Meystre loam, 0 to 15 percent slopes	Farmland of statewide
139	Nard ashy loam, 0 to 3 percent slopes	All areas are prime
144	Nard ashy loam, 5 to 25 percent slopes	Farmland of statewide
160	Cumulic Haploxerolls, 0 to 3 percent slopes	Farmland of statewide
201	Roslyn ashy sandy loam, 0 to 5 percent slopes	All areas are prime
203	Teanaway ashy loam, 3 to 10 percent slopes	Farmland of statewide
207	Quicksell loam, 0 to 5 percent slopes	Prime farmland if i
208	Patnish-Mippon-Myzel complex, 0 to 3 percent slopes	All areas are prime
211	Teanaway ashy loam, 0 to 3 percent slopes	All areas are prime
213	Roslyn ashy sandy loam, moist, 3 to 25 percent slopes	Farmland of statewide
262	Roslyn ashy sandy loam, clay loam subsoil, 0 to 5 percent slopes	All areas are prime
410	Tanaha ashy loam, 0 to 2 percent slopes	Prime farmland if i
415	Benwy silt loam, 5 to 10 percent slopes	Farmland of statewide
424	Cleman very fine sandy loam, 0 to 2 percent slopes	Prime farmland if i
440	Nitzel ashy silt loam, 0 to 2 percent slopes	Prime farmland if i
466	Benwy silt loam, 10 to 15 percent slopes	Farmland of statewide
480	Nanum ashy loam, 0 to 2 percent slopes	Prime farmland if i
481	Nanum ashy loam, 2 to 5 percent slopes	Prime farmland if i
482	Rollinger ashy silt loam, 5 to 10 percent slopes	Farmland of statewide
487	Rollinger ashy silt loam, 2 to 5 percent slopes	Prime farmland if i
492	Rollinger ashy silt loam, 10 to 15 percent slopes	Farmland of statewide
493	Rollinger ashy silt loam, 15 to 30 percent slopes	Farmland of statewide
494	Caliralls silt loam, 10 to 15 percent slopes	Farmland of statewide
495	Caliralls-Clerf complex, 15 to 30 percent slopes	Farmland of statewide
513	Meloz-Cowiche complex, 15 to 30 percent slopes	Farmland of statewide
516	Selah loam, 0 to 2 percent slopes	Prime farmland if i
517	Selah loam, 5 to 10 percent slopes	Farmland of statewide
519	Selah loam, 2 to 5 percent slopes	Prime farmland if i
532	Selah-Terlan complex, 10 to 15 percent slopes	Farmland of statewide
533	Selah loam, 15 to 30 percent slopes	Farmland of statewide
535	Zen silt loam, 5 to 10 percent slopes	Farmland of statewide
538	Zen silt loam, 10 to 15 percent slopes	Farmland of statewide
554	Pachneum ashy loam, 2 to 5 percent slopes	Prime farmland if i
557	Pachneum ashy loam, 15 to 30 percent slopes	Farmland of statewide
561	Elkheights loam, 15 to 30 percent slopes	Farmland of statewide
563	Mendian very fine sandy loam, 0 to 2 percent slopes	Prime farmland if i
580	Woldale clay loam, 0 to 2 percent slopes	Prime farmland if i
584	Varodale clay, 0 to 2 percent slopes	Farmland of statewide
585	Varodale clay, 2 to 5 percent slopes	Farmland of statewide
586	Vanderbilt ashy loam, moderately wet, 0 to 2 percent slopes	Prime farmland if i

Table 6.--Prime and other Important Farmland--Continued

Map symbol	Map unit name	Farmland class
587	Argixerolls, 15 to 30 percent slopes-----	Farmland of statewide
589	Nack-Brickmill complex, 0 to 5 percent slopes-----	Prime farmland if i
590	Brickmill-Nanum complex, 0 to 5 percent slopes-----	Prime farmland if i
592	Umtanum ashy silt loam, 2 to 5 percent slopes-----	Prime farmland if i
601	Brickmill gravelly ashy loam, 0 to 2 percent slopes-----	Prime farmland if i
602	Brickmill gravelly ashy loam, 2 to 5 percent slopes-----	Prime farmland if i
603	Reeser ashy clay loam, 2 to 5 percent slopes-----	Prime farmland if i
604	Reeser ashy clay loam, 5 to 10 percent slopes-----	Farmland of statewide
609	Ackna ashy loam, 0 to 2 percent slopes-----	Prime farmland if i
610	Ackna ashy loam, 2 to 5 percent slopes-----	Prime farmland if i
612	Nitcha ashy loam, 0 to 2 percent slopes-----	Prime farmland if i
618	Nitzel ashy silt loam, gravelly substratum, 0 to 2 percent slopes-----	Prime farmland if i
621	Mitta ashy silt loam, flooded, 0 to 2 percent slopes-----	Prime farmland if i
622	Manastash loam, 0 to 2 percent slopes-----	Prime farmland if i
623	Manastash loam, 2 to 5 percent slopes-----	Prime farmland if i
624	Manastash loam, 5 to 10 percent slopes-----	Farmland of statewide
625	Manastash-Durtash complex, 5 to 10 percent slopes-----	Farmland of statewide
632	Manastash loam, 10 to 15 percent slopes-----	Farmland of statewide
633	Nack ashy loam, 0 to 2 percent slopes-----	Prime farmland if i
634	Manastash-Durtash complex, 10 to 15 percent slopes-----	Farmland of statewide
635	Opnish ashy loam, 0 to 2 percent slopes-----	Prime farmland if i
637	Tanksel-Lainand complex, 15 to 30 percent slopes-----	Farmland of statewide
640	Elkheights loam, 5 to 10 percent slopes-----	Farmland of statewide
650	Tanksel-Patron-Camaspach complex, 15 to 30 percent slopes-----	Farmland of statewide
661	Drysel loam, 5 to 10 percent slopes-----	Farmland of statewide
662	Ralock-Palerf complex, 15 to 30 percent slopes-----	Farmland of statewide
684	Nitzel-Weirman complex, 2 to 5 percent slopes-----	Prime farmland if i
693	Tanksel-Wockum complex, 15 to 30 percent slopes-----	Farmland of statewide
697	Wockum-Blint complex, 15 to 30 percent slopes-----	Farmland of statewide
706	Kayak gravelly ashy loam, 0 to 2 percent slopes-----	Prime farmland if i
720	Nanum ashy sandy clay loam, 0 to 2 percent slopes-----	Prime farmland if i
724	Manastash-Durtash complex, 2 to 5 percent slopes-----	Prime farmland if i
745	Zen-Benwy-Laric complex, 3 to 15 percent slopes-----	Farmland of statewide
748	Malaga gravelly sandy loam, 2 to 5 percent slopes-----	Prime farmland if i
758	Sohappy-Fortyday complex, 3 to 15 percent slopes-----	Farmland of statewide
772	Haploxerolls-Weirman-Aquolls complex, 0 to 5 percent slopes-----	Prime farmland if i
789	Deedale clay loam, 0 to 2 percent slopes-----	Farmland of statewide
790	Mitta ashy silt loam, 0 to 2 percent slopes-----	Prime farmland if i
791	Mitta ashy silt loam, drained, 0 to 2 percent slopes-----	Prime farmland if i
792	Brickmill gravelly ashy loam, 0 to 5 percent slopes-----	Prime farmland if i
793	Zillah-Kayak complex, 0 to 2 percent slopes-----	Prime farmland if i
794	Kayak-Weirman complex, 0 to 2 percent slopes-----	Prime farmland if i
795	Nack-Opnish complex, 0 to 2 percent slopes-----	Prime farmland if i
796	Brickmill-Nack complex, 0 to 2 percent slopes-----	Prime farmland if i

Table 6.--Prime and other Important Farmland--Continued

Map symbol	Map unit name	Farmland clas
797	Brysil ash loam, 0 to 2 percent slopes-----	Prime farmland if i
799	Brysil gravelly ash loam, 0 to 2 percent slopes-----	Prime farmland if i
800	Brysil gravelly ash loam, 2 to 5 percent slopes-----	Prime farmland if i
801	Brysil cobbly ash loam, 0 to 2 percent slopes-----	Prime farmland if i
802	Brysil cobbly ash loam, 2 to 5 percent slopes-----	Prime farmland if i
804	Benwy silt loam, 2 to 5 percent slopes-----	Prime farmland if i
807	Brysil-Ackna complex, 0 to 2 percent slopes-----	Farmland of statewi
809	Weirman-Kayak-Zillah complex, 0 to 2 percent slopes-----	Prime farmland if i
816	Patron complex, landslide, 5 to 15 percent slopes-----	Farmland of statewi
817	Manastash loam, 2 to 5 percent slopes-----	Prime farmland if i
818	Umtanum ash silt loam, 0 to 2 percent slopes-----	Prime farmland if i
819	Millhouse cobbly ash loam, 0 to 5 percent slopes-----	Prime farmland if i
820	Modsel complex, 0 to 5 percent slopes-----	Prime farmland if i
822	Reeser-Reelow-Sketter complex, 2 to 5 percent slopes-----	Farmland of statewi
823	Millhouse cobbly ash loam, 5 to 10 percent slopes-----	Prime farmland if i
824	Pachneum ash loam, 5 to 10 percent slopes-----	Farmland of statewi
825	Pachneum ash loam, 10 to 15 percent slopes-----	Farmland of statewi
828	Swauk loam, 5 to 15 percent slopes-----	Farmland of statewi
829	Swauk loam, 15 to 30 percent slopes-----	Farmland of statewi
830	Swauk-Qualla complex, 5 to 15 percent slopes-----	Farmland of statewi
831	Qualla loam, 0 to 5 percent slopes-----	All areas are prime
832	Qualla loam, 5 to 15 percent slopes-----	Farmland of statewi
833	Swauk loam, 0 to 5 percent slopes-----	All areas are prime
835	Swauk-Qualla complex, 15 to 30 percent slopes-----	Farmland of statewi
838	Nosal ash silt loam, 0 to 2 percent slopes-----	Prime farmland if i
839	Vanderbilt ash loam, 0 to 2 percent slopes-----	Prime farmland if i
841	Metser clay loam, 2 to 5 percent slopes-----	Farmland of statewi
844	Metmill very gravelly ash loam, 0 to 5 percent slopes-----	Prime farmland if i
855	Swauk-Elkheights-Lablue complex, 3 to 15 percent slopes-----	Farmland of statewi
870	Millhouse-Metser complex, 0 to 5 percent slopes-----	Prime farmland if i
872	Elkheights-Swauk complex, 5 to 15 percent slopes-----	Farmland of statewi
877	Maxhill ash loam, 0 to 5 percent slopes-----	Prime farmland if i
880	Elkheights-Qualla complex, 5 to 15 percent slopes-----	Farmland of statewi
897	Nanum ash loam, flooded, 0 to 2 percent slopes-----	Prime farmland if i
899	Bedron-Nint complex, 15 to 45 percent slopes-----	Farmland of statewi
900	Deedale clay loam, flooded, 0 to 2 percent slopes-----	Farmland of statewi
901	Niben-Vantage-Benwy complex, 15 to 30 percent slopes-----	Farmland of statewi
902	Patron-Camaspatch complex, 15 to 30 percent slopes-----	Farmland of statewi
920	Esquatzel-Aquolls-Weirman complex, 0 to 5 percent slopes-----	Prime farmland if i
923	Timmerman-Sagehill complex, 3 to 15 percent slopes-----	Farmland of statewi
932	Volinger-Mozen complex, 15 to 30 percent slopes-----	Farmland of statewi
933	Mozen-Volinger-Yrtneg complex, 5 to 15 percent slopes	Farmland of statewi
936	Shushuskin-Fachneum-Shinn complex, 3 to 15 percent north slopes-----	Farmland of statewi

Table 6.--Prime and other Important Farmland--Continued

Map symbol	Map unit name	Farmland clas
940	Renslow silt loam, 5 to 10 percent slopes-----	Farmland of statewi
941	Renslow silt loam, 10 to 15 percent slopes-----	Farmland of statewi
954	Esquatzel silt loam, 0 to 2 percent slopes-----	Prime farmland if i
955	Esquatzel-Weirman complex, 0 to 2 percent slopes-----	Prime farmland if i
957	Kayak-Weirman complex, rarely flooded, 0 to 2 percent slopes-----	Prime farmland if i
966	Ellisforde silt loam, 8 to 15 percent slopes-----	Farmland of statewi
981	Taneum loam, 5 to 15 percent slopes-----	Farmland of statewi

Table 7.--Hydric Soils

(Only the hydric components of the map units are included in this table. Map units that do not have hydric components are not listed. Definitions of hydric criteria codes are included at the end of this table.)

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric so	
					Hydric criteria code	Meet saturation criteria
89: Cryaquepts, 0 to 3 percent slopes	Cryaquepts	85	Yes	Depressions, troughs	2B3	Yes
160: Cumulic Haploxerolls, 0 to 3 percent slopes	Aquolls	10	Yes	Flood plains	2B3	Yes
187: Chinkmin ashly sandy loam, 5 to 30 percent slopes	Cryaquepts	3	Yes	Depressions, troughs	2B3	Yes
205: Xerofluvents, 0 to 5 percent slopes	Aquolls	5	Yes	Flood plains	2B3	Yes
214: Haplosaprists, 0 to 2 percent slopes	Haplosaprists	90	Yes	Basin floors	1	No
259: Fluvaquents, 0 to 2 percent slopes	Fluvaquents	85	Yes	Flood plains	2B3	Yes
267: Esmeralda very gravelly ashly loam, moist, 10 to 30 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
301: Vabus ashly sandy loam, 0 to 25 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
302: Vabus ashly sandy loam, 25 to 45 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils	
					Hydric criteria code	Meets saturation criteria
306: Vabus stony ashly sandy loam, 5 to 25 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
308: Vabus stony ashly sandy loam, 45 to 65 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
309: Vabus ashly sandy loam, 45 to 65 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
313: Vabus stony ashly sandy loam, 25 to 45 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
318: Vabus very stony ashly sandy loam, 25 to 45 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
319: Vabus very stony ashly sandy loam, 45 to 65 percent south slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
320: Vabus-Rock outcrop complex, 10 to 60 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
322: Vabus very stony ashly sandy loam, 45 to 65 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils	
					Hydric criteria code	Meets saturation crite
323: Cryorthents cobbly ashy loam, cool, 0 to 3 percent slopes	Cryaquepts	5	Yes	Depressions, troughs	2B3	Yes
328: Cryofluvents- Dystrocrypts complex, 0 to 3 percent slopes	Cryaquepts	10	Yes	Depressions, troughs	2B3	Yes
598: Zillah silt loam, 0 to 2 percent slopes	Zillah	85	Yes	Flood plains	2B3	Yes
684: Nitzel-Weirman complex, 2 to 5 percent slopes	Aquolls	5	Yes	Flood plains	2B3	Yes
772: Haploxerolls-Weirman- Aquolls complex, channeled, 0 to 5 percent slopes	Aquolls	15	Yes	Flood plains	2B3	Yes
793: Zillah-Kayak complex, 0 to 2 percent slopes	Zillah	55	Yes	Flood plains	2B3	Yes
794: Kayak-Weirman complex, 0 to 2 percent slopes	Zillah	5	Yes	Flood plains	2B3	Yes
809: Weirman-Kayak-Zillah complex, 0 to 2 percent slopes	Zillah	25	Yes	Flood plains	2B3	Yes
920: Esquatzel-Aquolls- Weirman complex, channeled, 0 to 5 percent slopes	Aquolls	25	Yes	Flood plains	2B3	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric so	
					Hydric criteria code	Meets saturation crite
954: Esquatzel silt loam, 0 to 2 percent slopes	Aquolls	5	Yes	Flood plains	2B3	Yes
955: Esquatzel-Weirman complex, channeled, 0 to 2 percent slopes	Aquolls	10	Yes	Flood plains	2B3	Yes
957: Kayak-Weirman complex, rarely flooded, 0 to 2 percent slopes	Aquolls	10	Yes	Flood plains	2B3	Yes

Explanation of hydric criteria codes:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0 feet) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1.) a water table at the surface (0 feet) during the growing season if texture is coarse sand, sand, or fine sand in all layers within a depth of 20 inches
 - 2.) a water table at a depth of 0.5 foot or less during the growing season if texture is equal to or greater than 6 inches per hour in all layers within a depth of 20 inches
 - 3.) a water table at a depth of 1 foot or less during the growing season if texture is less than 6 inches per hour in any layer within a depth of 20 inches
3. Soils that are frequently ponded for long or very long duration during the growing season
4. Soils that are frequently flooded for long or very long duration during the growing season

Table 8.--Engineering Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4		
							10	20	40
2: Saydab-----	In				Pct	Pct			
	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-3	Cobbly ashy loam	ML			0-5	10-20	85-95	80-90
	3-10	Gravelly ashy loam, gravelly ashy silt loam	SM, GM			0	0-10	60-85	50-75
	10-17	Very gravelly ashy loam, gravelly ashy loam, gravelly ashy silt loam	GM, SM			0	0-15	60-80	50-70
	17-27	Very cobbly ashy loam, very cobbly ashy silt loam	GM, SM			0-10	30-45	55-85	50-75
3: Naxing-----	27-36	Unweathered bedrock			---	---	---	---	---
	0-2	Slightly decomposed plant material	PT			0	0	100	100
	2-6	Ashy loam	ML			0	0-5	85-95	80-90
	6-18	Gravelly ashy loam	SM			0-10	0-15	65-85	55-75
	18-38	Extremely cobbly ashy sandy loam, very cobbly ashy loam, very cobbly ashy sandy loam	GM, SM			0-15	30-50	30-65	20-55
	38-60	Extremely cobbly sandy loam, extremely gravelly loam, very cobbly sandy loam	GM, GC-GM			5-15	20-50	30-65	20-55
4: Naxing-----	0-2	Slightly decomposed plant material	PT			0	0	100	100
	2-6	Gravelly ashy loam	ML			5-10	0-15	75-95	70-90
	6-18	Gravelly ashy loam	SM			0-10	0-15	65-85	55-75
	18-38	Extremely cobbly ashy sandy loam, very cobbly ashy loam, very cobbly ashy sandy loam	GM, SM			0-15	30-50	30-65	20-55
	38-60	Extremely cobbly sandy loam, extremely gravelly loam, very cobbly sandy loam	GM, GC-GM			5-15	20-50	30-65	20-55

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-						
			Unified		AASHTO	>10 inches	3-10 inches	4			10	40	
6: Ganis-----	In					Pct	Pct						
	0-10	Ashy silt loam	ML	A-4		0	0	90-100	85-100	85-95	85-95	85-95	85-95
	10-19	Gravelly ash silt loam, cobbly ash loam	ML, GM, SM	A-4		0-5	10-25	70-95	60-85	50-75	50-75	50-75	50-75
	19-29	Unweathered bedrock				---	---	---	---	---	---	---	---
8: Sapkin-----	0-5	Very cobbly loam	SC-SM, CL-ML, A-4 GC-GM			0-25	40-55	70-80	60-75	50-70	50-70	50-70	50-70
	5-16	Very cobbly loam, cobbly loam	SC-SM, CL-ML, A-4 GC-GM, SC			0-10	10-50	70-90	60-80	50-75	50-75	50-75	50-75
	16-25	Very cobbly loam, cobbly loam	SC-SM, CL-ML, A-4 GC, GC-GM			0-10	25-50	70-90	60-80	50-75	50-75	50-75	50-75
	25-36	Very cobbly loam, extremely cobbly clay loam, very cobbly clay loam	GC, GC-GM	A-2, A-4, A-6		0-10	35-55	30-70	25-60	20-50	20-50	20-50	20-50
	36-46	Unweathered bedrock				---	---	---	---	---	---	---	---
9: Naxing-----	0-2	Slightly decomposed plant material	PT	A-8		0	0	100	100	60-10	60-10	60-10	60-10
	2-6	Ashy loam	ML	A-4		0	0-5	85-95	80-90	60-75	60-75	60-75	60-75
	6-18	Gravelly ash loam	SM	A-4, A-2		0-10	0-15	65-85	55-75	40-65	40-65	40-65	40-65
	18-38	Extremely cobbly ash sandy loam, very cobbly ashy loam, very cobbly ashy sandy loam	GM, SM	A-2, A-1		0-15	30-50	30-65	20-55	15-45	15-45	15-45	15-45
	38-60	Extremely cobbly sandy loam, extremely gravelly loam, very cobbly sandy loam	GM, GC-GM	A-1, A-2		5-15	20-50	30-65	20-55	15-45	15-45	15-45	15-45
10: Anatone-----	0-3	Very cobbly loam	GC	A-6		0-5	40-50	60-70	50-60	45-55	45-55	45-55	45-55
	3-10	Very cobbly loam, very gravelly loam	GC	A-2, A-6		0-5	5-45	40-65	35-55	25-50	25-50	25-50	25-50
	10-14	Extremely gravelly loam, very gravelly loam, extremely cobbly loam	GC	A-2		0-5	20-65	35-60	25-50	20-45	20-45	20-45	20-45
	14-24	Unweathered bedrock				---	---	---	---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
	<i>In</i>					<i>Pct</i>			
10Y: Bocker-----	0-3	Very cobbly silt loam	GC	A-6	0-5	40-50	55-70	45-65	40-55
	3-9	Very gravelly loam, extremely gravelly loam, extremely cobbly loam	GC	A-2, A-6	0-5	0-45	35-65	25-55	20-50
	9-19	Unweathered bedrock			---	---	---	---	---
11: Sapkin-----	0-5	Very cobbly loam	SC-SM, CL-ML, A-4 GC-GM		0-25	40-55	70-80	60-75	50-70
	5-16	Very cobbly loam, cobbly loam	SC-SM, CL-ML, A-4 GC-GM, SC		0-10	10-50	70-90	60-80	50-75
	16-25	Very cobbly loam, cobbly loam	SC-SM, CL-ML, A-4 GC, GC-GM		0-10	25-50	70-90	60-80	50-75
	25-36	Very cobbly loam, extremely cobbly clay loam, very cobbly clay loam	GC, GC-GM GC, GC-GM	A-2, A-4, A-6	0-10	35-55	30-70	25-60	20-50
	36-46	Unweathered bedrock			---	---	---	---	---
	0-60	Fragmental material			---	---	---	---	---
12: Sapkin-----	0-5	Very cobbly loam	SC-SM, CL-ML, A-4 GC-GM		0-25	40-55	70-80	60-75	50-70
	5-16	Very cobbly loam, cobbly loam	SC-SM, CL-ML, A-4 GC-GM, SC		0-10	10-50	70-90	60-80	50-75
	16-25	Very cobbly loam, cobbly loam	SC-SM, CL-ML, A-4 GC, GC-GM		0-10	25-50	70-90	60-80	50-75
	25-36	Very cobbly loam, extremely cobbly clay loam, very cobbly clay loam	GC, GC-GM GC, GC-GM	A-2, A-4, A-6	0-10	35-55	30-70	25-60	20-50
	36-46	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
13: Jumpe-----	In				Pct	Pct			
	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	2-4	Stony ashy loam	ML	A-4	5-10	5-20	85-100	75-95	60-85
	4-12	Cobbly ashy loam	ML	A-4	0-10	5-45	85-100	75-90	60-80
	12-28	Very cobbly ashy loam, extremely cobbly ashy loam, very cobbly ashy silt loam	SC, SM, GC-GM	A-2, A-4	0-10	40-50	65-80	35-65	30-60
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1	0-10	35-65	40-60	35-55	25-40
14: Jumpe-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	2-4	Stony ashy loam	ML	A-4	5-10	5-20	85-100	75-95	60-85
	4-12	Cobbly ashy loam	ML	A-4	0-10	5-45	85-100	75-90	60-80
	12-28	Very cobbly ashy loam, extremely cobbly ashy loam, very cobbly ashy silt loam	SC, SM, GC-GM	A-2, A-4	0-10	40-50	65-80	35-65	30-60
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1	0-10	35-65	40-60	35-55	25-40
15: Stemilt-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	1-5	Ashy loam	ML	A-4	0	0-5	90-95	85-90	75-85
	5-17	Ashy loam, cobbly ashy loam, gravelly ashy loam, ashy silt loam	ML	A-4	0	0-25	75-95	70-90	60-85
	17-60	Very cobbly clay loam, extremely cobbly clay loam, very cobbly loam	GC	A-2, A-6, A-7	0-15	35-55	35-65	30-55	25-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	inches		
							>10	3-10	4
16: Stemilt-----	In					Pct			
	0-1	Moderately decomposed plant material	PT	A-8			0	0	100
	1-5	Ashy loam	ML	A-4			0	0-5	90-95
	5-17	Ashy loam, cobbly ashy loam, gravelly ashy loam, ashy silt loam	ML	A-4			0	0-25	75-95
	17-60	Very cobbly clay loam, extremely cobbly clay loam, very cobbly loam	GC						70-90
				A-2, A-6, A-7	0-15	35-55			30-55
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---
18: Loneridge-----	0-4	Ashy loam	CL-ML, CL	A-4			0-2	0-10	90-95
	4-19	Very cobbly ashy loam, very gravelly ashy loam, cobbly ashy silt loam	GC-GM, CL, CL-ML, SC-SM	A-4, A-2	0-10	5-45			85-95
	19-46	Very cobbly clay, very cobbly clay loam, extremely gravelly clay	GC, SC		5-10	20-40			45-80
	46-60	Extremely gravelly clay, very cobbly clay, very cobbly clay loam	GC, SC	A-7, A-2	5-10	30-40			25-65
19: Darland-----	0-7	Very gravelly ashy loam	SM, GC-GM, GM, SC-SM	A-2, A-4	2-5	5-10			65-75
	7-15	Very gravelly ashy loam	SM, GC-GM	A-2	0-5	5-10			55-65
	15-21	Very cobbly loam, very gravelly loam, extremely cobbly loam	GM, GC-GM	A-2	0	20-45			45-50
	21-32	Extremely cobbly loam, very gravelly loam, very cobbly loam	GC-GM, GC	A-2	0-5	15-75			40-50
	32-60	Extremely cobbly sandy loam, extremely cobbly loam, very cobbly sandy loam	GM, SM	A-1, A-2	0-5	35-75			35-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--				
			Unified	AASHTO	inches	3-10 inches	4			10	40
20: Darland, moist--	In					Pct	Pct				
	0-7	Very gravelly ashly loam	SM, GC-GM, GM, SC-SM	A-2, A-4		2-5	5-10	65-75	55-65	40-50	
	7-15	Very gravelly ashly loam	SM, GC-GM	A-2		0-5	5-10	65-75	45-50	35-40	
	15-21	Very cobbly loam, very gravelly loam, extremely cobbly loam	GM, GC-GM	A-2		0	20-45	50-65	40-50	30-40	
	21-32	Extremely cobbly loam Extremely cobbly loam, very gravelly loam, very cobbly loam	GC-GM, GC	A-2		0-5	15-75	45-60	35-50	25-35	
	32-60	Extremely cobbly sandy loam, extremely cobbly loam, very cobbly sandy loam	GM, SM	A-1, A-2		0-5	35-75	45-60	35-50	25-35	
24: Loneridge, north slopes-----	0-4	Ashy loam	CL-ML, CL	A-4		0-2	0-10	90-95	85-95	65-75	
	4-19	Very cobbly ashly loam, very gravelly ashly loam, cobbly ashly silt loam	GC-GM, CL-ML, CL, SC-SM	A-4, A-2		0-10	5-45	55-90	45-80	35-70	
	19-46	Very cobbly clay, very cobbly clay loam, extremely gravelly clay	GC, SC	A-7, A-2		5-10	20-40	45-80	25-65	20-60	
	46-60	Extremely gravelly clay, very cobbly clay, very cobbly clay loam	GC, SC	A-7, A-2		5-10	30-40	45-80	25-65	20-60	
27: Tekison-----	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100	60-100	
	1-8	Stony loam	CL-ML, CL	A-4		5-15	5-10	90-100	85-95	70-80	
	8-15	Extremely cobbly clay loam, very cobbly loam, very cobbly clay loam	GC, SC	A-2, A-6		0-10	20-50	50-75	40-65	30-45	
	15-60	Extremely cobbly clay, extremely gravelly clay, very cobbly clay	GC	A-2, A-7		0-10	10-50	30-60	20-50	15-40	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
28: Odo-----	<i>In</i>					<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-11	Loam	CL-ML, CL	A-4		0	0-5	90-100	80-100
	11-19	Loam, gravelly loam	CL-ML, CL	A-4		0	0-5	65-100	60-95
	19-60	Gravelly loam, loam	SC, GC, SC- SM, GC-GM	A-4, A-6, A-2	0	0-5	0-5	60-85	55-80
29: Stemilt, warm---	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-5	Very gravelly ashy loam	GM	A-2	0-5	10-25	50-60	40-50	35-40
	5-17	Very cobbly ashy loam	GC-GM, SC-SM	A-2, A-4	0-5	30-45	55-75	45-60	40-50
	17-60	Very cobbly clay loam, extremely cobbly clay loam, very cobbly loam	GC	A-2, A-6, A-7	0-15	35-55	35-65	30-55	25-50
30: Stemilt-----	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100
	1-5	Ashy loam	ML	A-4		0	0-5	90-95	85-90
	5-17	Ashy loam, cobbly ashy loam, gravelly ashy loam, ashy silt loam	ML	A-4		0	0-25	75-95	70-90
	17-60	Very cobbly clay loam, extremely cobbly clay loam, very cobbly loam	GC	A-2, A-6, A-7	0-15	35-55	35-65	30-55	25-50
32: Stemilt-----	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100
	1-5	Ashy loam	ML	A-4		0	0-5	90-95	85-90
	5-17	Ashy loam, cobbly ashy loam, gravelly ashy loam, ashy silt loam	ML	A-4		0	0-25	75-95	70-90
	17-60	Very cobbly clay loam, extremely cobbly clay loam, very cobbly loam	GC	A-2, A-6, A-7	0-15	35-55	35-65	30-55	25-50
33: Bocker-----	0-3	Very cobbly silt loam	GC	A-6	0-5	40-50	55-70	45-65	40-55
	3-9	Very gravelly loam, extremely gravelly loam, extremely cobbly loam	GC	A-2, A-6	0-5	0-45	35-65	25-55	20-50
	9-19	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	inches	4	10	40
33: Jumpe-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-2	Moderately decomposed plant material	PT			0	0	100	60-100
	2-4	Stony ashy loam	ML			5-10	5-20	85-100	75-95
	4-12	Cobbly ashy loam	ML			0-10	5-45	85-100	75-90
	12-28	Very cobbly ashy loam, extremely cobbly ashy loam, very cobbly ashy silt loam	SC, SM, GC-GM	A-2, A-4		0-10	40-50	65-80	35-65
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1		0-10	35-65	40-60	35-55
34: Bocker-----	0-3	Very cobbly silt loam	GC			0-5	40-50	55-70	45-65
	3-9	Very gravelly loam, extremely gravelly loam, extremely cobbly loam	GC	A-2, A-6		0-5	0-45	35-65	25-55
	9-19	Unweathered bedrock				---	---	---	---
	0-5	Very cobbly loam	SC-SM, CL-ML, GC-GM	A-4		0-25	40-55	70-80	60-75
	5-16	Very cobbly loam, cobbly loam	SC-SM, CL-ML, GC-GM, SC	A-4		0-10	10-50	70-90	60-80
	16-25	Very cobbly loam, cobbly loam	SC-SM, CL-ML, GC, GC-GM	A-4		0-10	25-50	70-90	60-80
35: Bocker-----	25-36	Very cobbly loam, extremely cobbly clay loam, very cobbly clay loam	GC, GC-GM	A-2, A-4, A-6		0-10	35-55	30-70	25-60
	36-46	Unweathered bedrock				---	---	---	---
	0-3	Very cobbly silt loam	GC	A-6		0-5	40-50	55-70	45-65
	3-9	Very gravelly loam, extremely gravelly loam, extremely cobbly loam	GC	A-2, A-6		0-5	0-45	35-65	25-55
	9-19	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Fragments inches	4	10	40
35: Stemilt-----	In				Pct	Pct			
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-5	Ashy loam	ML	A-4	0	0-5	90-95	85-90	75-85
	5-17	Ashy loam, cobbly ashy loam, gravelly ashy loam, ashy silt loam	ML	A-4	0	0-25	75-95	70-90	60-85
	17-60	Very cobbly clay loam, extremely cobbly clay loam, very cobbly loam	GC	A-2, A-6, A-7	0-15	35-55	35-65	30-55	25-50
40: Rubble land-----	0-60	Fragmental material							
	0-60	Unweathered bedrock			---	---	---	---	---
	0-60	Unweathered bedrock			---	---	---	---	---
41: Cliffdell-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-9	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-15	70-90	60-75	40-55
	9-26	Very cobbly loam, very gravelly loam, very cobbly sandy loam	SC-SM, GC-GM, SC, SM	A-2, A-4	0-10	25-50	50-85	40-65	30-55
	26-60	Extremely cobbly loam	GC-GM, SC, SC-SM, SM	A-1, A-2	0-15	40-65	40-60	25-40	20-35
	26-60	Extremely cobbly loam	GC-GM, SC, SC-SM, SM	A-1, A-2	0-15	40-65	40-60	25-40	20-35
42: Cliffdell-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-9	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-15	70-90	60-75	40-55
	9-26	Very cobbly loam, very gravelly loam, very cobbly sandy loam	SC-SM, GC-GM, SC, SM	A-2, A-4	0-10	25-50	50-85	40-65	30-55
	26-60	Extremely cobbly loam	GC-GM, SC, SC-SM, SM	A-1, A-2	0-15	40-65	40-60	25-40	20-35
	26-60	Extremely cobbly loam	GC-GM, SC, SC-SM, SM	A-1, A-2	0-15	40-65	40-60	25-40	20-35

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
48: Jumpe, north slopes-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-4	Stony ashly loam	ML	A-4	5-10	5-20	85-100	75-95	60-85
	4-12	Cobbly ashly loam	ML	A-4	0-10	5-45	85-100	75-90	60-80
	12-28	Very cobbly ashly loam, extremely cobbly ashly loam, very cobbly ashly silt loam	SC, SM, GC-GM	A-2, A-4	0-10	40-50	65-80	35-65	30-60
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1	0-10	35-65	40-60	35-55	25-40
49: Jumpe, south slopes-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-4	Stony ashly loam	ML	A-4	5-10	5-20	85-100	75-95	60-85
	4-12	Cobbly ashly loam	ML	A-4	0-10	5-45	85-100	75-90	60-80
	12-28	Very cobbly ashly loam, extremely cobbly ashly loam, very cobbly ashly silt loam	SC, SM, GC-GM	A-2, A-4	0-10	40-50	65-80	35-65	30-60
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1	0-10	35-65	40-60	35-55	25-40
50: Jumpe, south slopes-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-4	Stony ashly loam	ML	A-4	5-10	5-20	85-100	75-95	60-85
	4-12	Cobbly ashly loam	ML	A-4	0-10	5-45	85-100	75-90	60-80
	12-28	Very cobbly ashly loam, extremely cobbly ashly loam, very cobbly ashly silt loam	SC, SM, GC-GM	A-2, A-4	0-10	40-50	65-80	35-65	30-60
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1	0-10	35-65	40-60	35-55	25-40
	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-4	Stony ashly loam	ML	A-4	5-10	5-20	85-100	75-95	60-85
	4-12	Cobbly ashly loam	ML	A-4	0-10	5-45	85-100	75-90	60-80
	12-28	Very cobbly ashly loam, extremely cobbly ashly loam, very cobbly ashly silt loam	SC, SM, GC-GM	A-2, A-4	0-10	40-50	65-80	35-65	30-60
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1	0-10	35-65	40-60	35-55	25-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4	10	40
51: Jumpe-----	In				Pct	Pct			
	0-2	Moderately decomposed plant material	PT			0	0	100	60-100
	2-4	Stony ashly loam	ML			5-10	5-20	85-100	75-95
	4-12	Cobbly ashly loam	ML			0-10	5-45	85-100	75-90
	12-28	Very cobbly ashly loam, extremely cobbly ashly loam, very cobbly ashly silt loam	SC, SM, GC-GM	A-2, A-4		0-10	40-50	65-80	35-65
	28-60	Extremely cobbly loam, very cobbly silt loam, very cobbly loam	GM	A-2, A-1		0-10	35-65	40-60	35-55
	0-60	Unweathered bedrock			---	---	---	---	---
52: Loneridge, north slopes-----	0-4	Ashy loam	CL-ML, CL	A-4		0-2	0-10	90-95	85-95
	4-19	Very cobbly ashly loam, very gravelly ashly loam, cobbly ashly silt loam	GC-GM, CL, CL-ML, SC-SM	A-4, A-2		0-10	5-45	55-90	45-80
	19-46	Very cobbly clay, very cobbly clay loam, extremely gravelly clay	GC, SC	A-7, A-2		5-10	20-40	45-80	25-65
	46-60	Extremely gravelly clay, very cobbly clay, very cobbly clay loam	GC, SC	A-7, A-2		5-10	30-40	45-80	25-65
53: Loneridge, south slopes-----	0-4	Ashy loam	CL-ML, CL	A-4		0-2	0-10	90-95	85-95
	4-19	Very cobbly ashly loam, very gravelly ashly loam, cobbly ashly silt loam	GC-GM, CL, CL-ML, SC-SM	A-4, A-2		0-10	5-45	55-90	45-80
	19-46	Very cobbly clay, very cobbly clay loam, extremely gravelly clay	GC, SC	A-7, A-2		5-10	20-40	45-80	25-65
	46-60	Extremely gravelly clay, very cobbly clay, very cobbly clay loam	GC, SC	A-7, A-2		5-10	30-40	45-80	25-65

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10	4		
							10	10	40
53M: Tekison-----	In				Pct	Pct			
	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100
	1-8	Stony loam	CL-ML, CL	A-4		5-15	5-10	90-100	85-95
	8-15	Extremely cobbly clay loam, very cobbly loam,	GC, SC	A-2, A-6		0-10	20-50	50-75	40-65
	15-60	Extremely cobbly clay, extremely gravelly clay, very cobbly clay	GC	A-2, A-7		0-10	10-50	30-60	20-50
54: Loneridge, south slopes-----									
	0-4	Ashy loam	CL-ML, CL	A-4		0-2	0-10	90-95	85-95
	4-19	Very cobbly ash loam, very gravelly ash loam, cobbly ash silt loam	GC-GM, CL, CL-ML, SC-SM	A-4, A-2		0-10	5-45	55-90	45-80
	19-46	Very cobbly clay, very cobbly clay loam, extremely gravelly clay	GC, SC	A-7, A-2		5-10	20-40	45-80	25-65
	46-60	Extremely gravelly clay, very cobbly clay, very cobbly clay loam	GC, SC	A-7, A-2		5-10	30-40	45-80	25-65
54M: Tekison-----	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100
	1-8	Stony loam	CL-ML, CL	A-4		5-15	5-10	90-100	85-95
	8-15	Extremely cobbly clay loam, very cobbly loam, very cobbly clay loam	GC, SC	A-2, A-6		0-10	20-50	50-75	40-65
	15-60	Extremely cobbly clay, extremely gravelly clay, very cobbly clay	GC	A-2, A-7		0-10	10-50	30-60	20-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
55: Shinn-----	In				Pct	Pct			
	0-2	Very cobbly ashly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-5	25-35	50-70	40-55	30-45
	2-6	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	6-9	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	15-75	35-60	25-50	20-45
	9-18	Unweathered bedrock			---	---	---	---	---
56: Shinn-----	0-2	Very cobbly ashly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-5	25-35	50-70	40-55	30-45
	2-6	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	6-9	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	15-75	35-60	25-50	20-45
	9-18	Unweathered bedrock			---	---	---	---	---
Nint-----	0-9	Gravelly ashly loam	SM, GM, ML	A-4, A-2	5-10	0-10	60-90	50-75	35-65
	9-13	Very gravelly clay loam	GC, SC	A-2, A-6	0-10	10-30	40-75	30-60	20-50
	13-19	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6, A-7	0-10	15-35	40-70	30-55	20-45
	19-38	Very gravelly clay loam, extremely gravelly clay loam, extremely cobbly clay loam	GC	A-2	0-10	15-55	35-65	25-50	15-40
	38-48	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
56: Shushuskin-----	In				Pct	Pct			
	0-4	Ashy loam	ML			0	0	100	95-100 90-10
	4-8	Ashy loam, ashly silt loam	ML			0	0	100	95-100 90-10
	8-13	Ashy loam, ashly silt loam	ML			0	0	100	95-100 90-95
	13-19	Loam, silt loam, clay loam	CL			0	0	90-100 80-95	70-90
	19-23	Clay loam, silty clay loam	CL			0	0	90-100 80-95	70-90
	23-32	Very gravelly clay loam, clay loam, gravelly clay loam	SC, CL			0	15-35	55-95	45-90 35-85
	32-42	Unweathered bedrock			---	---	---	---	---
57: Nard, sandstone substratum-----	0-1	Slightly decomposed plant material	PT			0	0	100	100 60-10
	1-4	Stony ashly loam	GM, SM			10-25	10-30	55-80	50-60 40-50
	4-12	Ashy loam, ashly silt loam	ML, CL-ML			0	0	90-100 85-100	75-95
	12-24	Loam, clay loam, silt loam	CL			0	0	90-100 85-100	75-95
	24-34	Clay loam, loam, silty clay loam	CL			0	0	90-100 85-100	75-95
	34-43	Clay loam, loam, gravelly clay loam	CL, GC, SC			0	0-10	55-100 50-100	45-90
	43-47	Weathered bedrock			---	---	---	---	---
62: Pachneum-----	0-8	Ashy loam	ML			0	0	100	95-100 90-10
	8-18	Ashy loam, ashly silt loam	ML			0	0	100	95-100 90-10
	18-26	Clay loam, silty clay loam	CL			0	0	100	95-100 90-10
	26-33	Clay loam, silty clay loam	CL			0	0	100	95-100 90-10
	33-47	Clay loam, silty clay loam	CL			0	0	100	95-100 90-10
	47-60	Clay loam, silty clay loam	CL			0	0	100	95-100 90-10

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
64: Meystre-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	60-100
	1-4	Loam	CL-ML, ML						
	4-12	Loam	CL-ML			0	0	100	85-95
	12-42	Clay loam, loam, sandy clay loam	CL			0-5	0-5	100	85-95
	42-60	Fine sandy loam, sandy clay loam, sandy loam	SC, CL, ML, SM			0-5	0-5	100	80-100
65: Meystre-----								85-100	75-100
	0-1	Slightly decomposed plant material	PT						
	1-4	Stony loam	CL-ML, ML			0	0	100	60-100
	4-12	Loam	CL-ML			5-15	0-5	95-100	95-100
	12-42	Clay loam, loam, sandy clay loam	CL			0	0	100	80-90
	42-60	Fine sandy loam, sandy clay loam, sandy loam	SC, CL, ML, SM			0-5	0-5	100	85-95
66: Jumpmore, south slopes, stony surface-----								85-100	75-100
	0-1	Moderately decomposed plant material	PT						
	1-5	Gravelly ashy loam	GM, GC-GM						
	5-14	Cobbly ashy loam, very cobbly ashy loam, very loam	SM, GC-GM, GM, SC-SM			0-10	0-15	60-80	55-70
	14-30	Very cobbly loam, very gravelly loam, very gravelly sandy loam	SM, GC-GM, GM, SC-SM			0-5	15-35	60-85	50-75
	30-60	Very cobbly loam, very gravelly clay loam, extremely gravelly sandy clay loam	GC, GC-GM			0-10	25-45	40-75	20-55

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
67: Jumpmore, north slopes-----	<i>In</i>					<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	60-100
	1-5	Gravelly ashy loam	GM, GC-GM	A-4	0-10	0-15	60-80	55-70	50-60
	5-14	Cobbly ashy loam, very cobbly ashy loam, very gravelly ashy sandy loam	SM, GC-GM, GM, SC-SM	A-4, A-2	0-5	15-35	60-85	50-75	35-70
	14-30	Very cobbly loam, very gravelly loam, very gravelly sandy loam	SM, GC-GM, GM, SC-SM	A-2, A-4, A-1	0-5	25-40	55-80	45-60	30-55
	30-60	Very cobbly loam, very gravelly clay loam, extremely gravelly sandy clay loam	GC, GC-GM	A-2, A-1	0-10	25-45	40-75	20-55	10-50
69: Stirrup-----									
	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	60-100
	1-4	Ashy sandy loam	SM	A-2		0	0	90-100	80-100
	4-8	Gravelly medial sandy loam, medial loam, gravelly medial loam	SM, ML	A-4, A-2	0	0-15	70-95	60-90	45-75
	8-24	Very gravelly medial loam, very gravelly medial sandy loam, very cobbly medial sandy loam	GM	A-2, A-1	0	0-50	45-60	35-55	20-40
	24-36	Extremely gravelly medial sandy loam, extremely cobbly medial sandy loam, very gravelly medial sandy loam	GP-GM, GM	A-1	0-15	0-55	20-45	15-35	10-25
	36-43	Extremely gravelly sandy loam, extremely cobbly sandy clay loam	GP-GC, GM	A-2	0-5	30-70	10-55	5-45	5-35
	43-53	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
70: McDaniel-----	0-11	Very stony ashly loam	CL-ML						
	11-19	Gravelly ashly loam, very gravelly ashly loam	GC-GM, SC	A-4 A-4, A-2	10-25 0-5	5-10 0-30	75-80 60-80	70-75 50-75	65-75 35-60
	19-24	Very cobbly clay loam, very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-6, A-2	0-10	10-35	50-75	40-60	30-45
	24-32	Very cobbly clay loam, very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6	0-10	10-35	45-70	35-60	20-45
	32-60	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	20-60	30-70	20-60	15-45
71: Kiper-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	1-4	Stony ashly sandy loam	SM	A-4	3-25	0-10	85-95	80-90	55-60
	4-8	Ashy gravelly sandy loam, ashly sandy loam	SM	A-2, A-4	0-5	0	75-95	70-90	45-60
	8-35	Gravelly sandy loam, sandy loam	SM	A-2, A-4	0-5	0	70-95	65-90	40-60
	35-60	Gravelly loamy sand, gravelly sandy loam, sandy loam	SM	A-1, A-2	0-5	0	70-90	65-85	40-55
75: Yahne-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-100
	1-9	Cobbly ashly loam	ML, SM	A-4	0-5	15-25	75-85	70-80	60-70
	9-17	Very cobbly loam, cobbly loam, very gravelly loam	GC, GC-GM, SC, SC-SM	A-4, A-2, A-6	0-5	15-35	55-75	50-70	40-65
	17-60	Very cobbly clay, very gravelly clay, very gravelly clay loam	GC	A-7, A-2	0-15	15-50	50-75	45-65	35-60

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--					
			Unified	AASHTO	inches	3-10 inches	4			10	40	
76: Yahne-----	In					Pct	Pct					
	0-1	Slightly decomposed plant material	PT	A-8		0	0	100	100	60-100		
	1-9	Cobbly ashly loam	ML, SM	A-4		0-5	15-25	75-85	70-80	60-70		
	9-17	Very cobbly loam, cobbly loam, very gravelly loam	GC, GC-GM, SC, SC-SM	A-4, A-2, A-6	0-5	15-35	55-75	50-70	40-65			
77: Ainsley-----	17-60	Very cobbly clay, very gravelly clay, very gravelly clay loam	GC	A-7, A-2		0-15	15-50	50-75	45-65	35-60		
	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100	60-100		
	1-2	Stony ashly sandy loam	SM	A-2		15-30	5-15	75-85	60-70	45-50		
78: Ainsley-----	2-7	Gravelly ashly sandy loam	SM	A-2		0-5	0-5	70-85	55-75	40-55		
	7-22	Very cobbly ashly loam, extremely cobbly ashly loam	GC	A-2, A-4		0-25	30-50	50-65	45-60	40-50		
	22-34	Extremely cobbly clay loam, very cobbly clay loam	GC	A-2		0-25	40-55	35-50	35-45	25-40		
	34-60	Extremely cobbly clay loam, very cobbly clay loam, extremely cobbly clay	GC	A-2		0-25	40-55	35-50	30-45	25-40		
78: Ainsley-----												
	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100	60-100		
	1-2	Stony ashly sandy loam	SM	A-2		15-30	5-15	75-85	60-70	45-50		
	2-7	Gravelly ashly sandy loam	SM	A-2		0-5	0-5	70-85	55-75	40-55		
	7-22	Very cobbly ashly loam, extremely cobbly ashly loam	GC	A-2, A-4		0-25	30-50	50-65	45-60	40-50		
	22-34	Extremely cobbly clay loam, very cobbly clay loam	GC	A-2		0-25	40-55	35-50	35-45	25-40		
	34-60	Extremely cobbly clay loam, very cobbly clay loam, extremely cobbly clay	GC	A-2		0-25	40-55	35-50	30-45	25-40		

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
80: Cliffdell-----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-9	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-15	70-90	60-75	40-55
	9-26	Very cobbly loam, very gravelly loam, very cobbly sandy loam	SC-SM, GC-GM, SC, SM	A-2, A-4	0-10	25-50	50-85	40-65	30-55
	26-60	Extremely cobbly loam	GC-GM, SC, SC-SM, SM	A-1, A-2	0-15	40-65	40-60	25-40	20-35
Rock outcrop-----	0-60	Unweathered bedrock			---	---	---	---	---
81: Terence-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-6	Gravelly ashy sandy loam	SM	A-2, A-1	5-10	5-15	65-85	55-70	40-50
	6-14	Very cobbly ashy loam, very gravelly ashy sandy loam, gravelly ashy loam	SM, GM	A-2, A-1	0-10	0-45	50-85	40-65	20-45
	14-29	Extremely cobbly ashy loam, very gravelly ashy loam, very cobbly ashy loam	GM, SM	A-2, A-1	0-10	5-65	40-65	20-50	20-40
	29-60	Extremely cobbly ashy loam, very gravelly ashy loam, very cobbly ashy loam	GM, SM	A-1, A-2	0-10	5-65	40-65	20-50	20-40
83: Terence-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-6	Gravelly ashy sandy loam	SM	A-2, A-1	5-10	5-15	65-85	55-70	40-50
	6-14	Very cobbly ashy loam, very gravelly ashy sandy loam, gravelly ashy loam	SM, GM	A-2, A-1	0-10	0-45	50-85	40-65	20-45
	14-29	Extremely cobbly ashy loam, very gravelly ashy loam, very cobbly ashy loam	GM, SM	A-2, A-1	0-10	5-65	40-65	20-50	20-40
	29-60	Extremely cobbly ashy loam, very gravelly ashy loam, very cobbly ashy loam	GM, SM	A-1, A-2	0-10	5-65	40-65	20-50	20-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4		
							10	10	40
85: Spexarth-----	<i>In</i>					<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-5	Ashy sandy loam	SM			0	0	100	90-100
	5-19	Paragravelly ashly sandy loam, extremely	SM, ML			0	0	75-100	70-100
		paragravelly ashly loam, extremely paracobbly							60-70
		ashy sandy loam, ashly loam, gravelly ashly							60-85
		sandy loam							
	19-28	Very paragravelly sandy loam, gravelly sandy	SM, CL-ML, SC-SM, ML		0	0	75-100	70-100	55-85
		loam, very paragravelly loam							
	28-38	Weathered bedrock			---	---	---	---	---
86: Osborn, south slopes-----									
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-9	Ashy sandy loam	SM			0	0	90-100	85-100
	9-16	Sandy loam, loam, gravelly sandy loam	SM, ML			0	0	75-100	70-100
	16-33	Paragravelly sandy loam, paragravelly loam	SM, ML, CL- ML, SC-SM		0	0	90-100	85-100	55-75
	33-42	Weathered bedrock			---	---	---	---	---
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-9	Ashy sandy loam	SM			0	0	90-100	85-100
	9-16	Sandy loam, loam, gravelly sandy loam	SM, ML			0	0	75-100	70-100
87: Osborn, north slopes-----									
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-9	Ashy sandy loam	SM			0	0	90-100	85-100
	9-16	Sandy loam, loam, gravelly sandy loam	SM, ML			0	0	75-100	70-100
	16-33	Paragravelly sandy loam, paragravelly loam	SM, ML, CL- ML, SC-SM		0	0	90-100	85-100	55-75
	33-42	Weathered bedrock			---	---	---	---	---
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-9	Ashy sandy loam	SM			0	0	90-100	85-100
	9-16	Sandy loam, loam, gravelly sandy loam	SM, ML			0	0	75-100	70-100
89: Cryaquepts-----									
	0-7	Ashy silt loam	CL, CL-ML		0	0	100	85-100	70-100
	7-27	Ashy silt loam, ashly loam	CL, CL-ML		0	0	100	85-100	70-100
	27-60	Clay loam, silty clay loam, silt loam	CL		0	0	100	85-100	70-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	
90: Bertolotti, south slopes----	<i>In</i>				<i>Pct</i>	<i>Pct</i>				
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-100	
	1-3	Ashy sandy loam	SM	A-2, A-1	0	0	90-100	85-100	40-70	
	3-11	Ashy sandy loam	SM, SC-SM	A-2, A-4	0	0	85-95	80-90	55-65	
	11-17	Gravelly loam, very gravelly loam, very gravelly sandy loam	GM, SM	A-2, A-1	0	0-10	50-70	30-60	25-45	
	17-27	Very gravelly loam, very gravelly sandy loam, extremely cobbly loam	GM	A-2, A-1	0-5	5-55	50-60	30-50	25-45	
	27-60	Extremely cobbly loam, very cobbly loam, extremely gravelly sandy loam	GM, GP-GM, SM	A-1, A-2	0-5	30-50	45-75	20-45	20-35	
91: Bertolotti, north slopes----										
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-100	
	1-3	Ashy sandy loam	SM	A-2, A-1	0	0	90-100	85-100	40-70	
	3-11	Ashy sandy loam	SM, SC-SM	A-2, A-4	0	0	85-95	80-90	55-65	
	11-17	Gravelly loam, very gravelly loam, very gravelly sandy loam	GM, SM	A-2, A-1	0	0-10	50-70	30-60	25-45	
	17-27	Very gravelly loam, very gravelly sandy loam, extremely cobbly loam	GM	A-2, A-1	0-5	5-55	50-60	30-50	25-45	
	27-60	Extremely cobbly loam, very cobbly loam, extremely gravelly sandy loam	GM, GP-GM, SM	A-1, A-2	0-5	30-50	45-75	20-45	20-35	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-						
			Unified		AASHTO	>10 inches	3-10 inches	4			10	40	
92: Rock outcrop----- Bertolotti-----	In					Pct	Pct						
	0-60	Unweathered bedrock											
	0-1	Slightly decomposed plant material	PT	A-8		0	0	100	100	60-100			
	1-3	Ashy sandy loam	SM	A-2, A-1		0	0	90-100	85-100	40-70			
	3-11	Ashy sandy loam	SM, SC-SM	A-2, A-4		0	0	85-95	80-90	55-65			
	11-17	Gravelly loam, very gravelly loam, very gravelly sandy loam	GM, SM	A-2, A-1		0	0-10	50-70	30-60	25-45			
	17-27	Very gravelly loam, very gravelly sandy loam, extremely cobbly loam	GM	A-2, A-1		0-5	5-55	50-60	30-50	25-45			
	27-60	Extremely cobbly loam, very cobbly loam, extremely gravelly sandy loam	GM, GP-GM, SM	A-1, A-2		0-5	30-50	45-75	20-45	20-35			
93: Bertolotti-----	0-1	Slightly decomposed plant material	PT	A-8		0	0	100	100	60-100			
	1-3	Ashy sandy loam	SM	A-2, A-1		0	0	90-100	85-100	40-70			
	3-11	Ashy sandy loam	SM, SC-SM	A-2, A-4		0	0	85-95	80-90	55-65			
	11-17	Gravelly loam, very gravelly loam, very gravelly sandy loam	GM, SM	A-2, A-1		0	0-10	50-70	30-60	25-45			
	17-27	Very gravelly loam, very gravelly sandy loam, extremely cobbly loam	GM	A-2, A-1		0-5	5-55	50-60	30-50	25-45			
	27-60	Extremely cobbly loam, very cobbly loam, extremely gravelly sandy loam	GM, GP-GM, SM	A-1, A-2		0-5	30-50	45-75	20-45	20-35			

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							4	10	40
96: Terence-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-6	Gravelly ashy sandy loam	SM	A-2, A-1	5-10	5-15	65-85	55-70	40-50
	6-14	Very cobbly ashy loam, very gravelly ashy sandy loam, gravelly ashy loam	SM, GM	A-2, A-1	0-10	0-45	50-85	40-65	20-45
	14-29	Extremely cobbly ashy loam, very gravelly ashy loam, very cobbly ashy loam	GM, SM	A-2, A-1	0-10	5-65	40-65	20-50	20-40
	29-60	Extremely cobbly ashy loam, very gravelly ashy loam, very cobbly ashy loam	GM, SM	A-1, A-2	0-10	5-65	40-65	20-50	20-40
97: Stilgar-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-9	Gravelly ashy sandy loam	SM	A-2, A-1	0	0	60-70	50-65	30-40
	9-18	Very gravelly ashy sandy loam, very gravelly ashy loam, gravelly ashy sandy loam	GM	A-1, A-2	0	0	40-50	30-45	20-35
	18-38	Very gravelly ashy loam, extremely cobbly ashy loam, extremely gravelly ashy sandy loam	GM, GP-GM	A-1, A-2	0	0-55	25-50	20-40	10-40
	38-60	Extremely cobbly loam, very gravelly loam, extremely gravelly sandy loam	GM	A-1, A-2	0-5	25-55	30-45	20-40	15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-	
			Unified	AASHTO	inches	inches	4	
							10	40
101: Standup-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>		
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100
	1-5	Very gravelly ashly sandy loam	GM	A-1	0	0-10	50-60	45-50
	5-26	Extremely cobbly sandy loam, very gravelly sandy loam, very cobbly sandy loam	GM, SM	A-1	0-10	15-65	35-65	30-55
	26-60	Extremely cobbly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam	GM	A-1	0-15	25-70	40-60	30-50
102: Standup, north slopes-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100
	1-5	Very gravelly ashly sandy loam	GM	A-1	0	0-10	50-60	45-50
	5-26	Extremely cobbly sandy loam, very gravelly sandy loam, very cobbly sandy loam	GM, SM	A-1	0-10	15-65	35-65	30-55
	26-60	Extremely cobbly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam	GM	A-1	0-15	25-70	40-60	30-50
104: Currier-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100
	1-3	Cobbly ashly sandy loam	SM	A-2, A-1	0-10	15-30	90-100	80-95
	3-9	Very gravelly ashly sandy loam, very gravelly ashy loam, gravelly ashy sandy loam	GM	A-2, A-1, A-4	0-10	0-40	55-75	45-65
	9-36	Very gravelly ashly sandy loam, extremely gravelly ashly loam, extremely cobbly ashly loam	GM	A-1, A-2	0-10	0-40	30-60	20-50
	36-60	Extremely gravelly sandy loam, extremely cobbly sandy loam, extremely cobbly loam	GM, GP-GM	A-1	0-15	5-55	20-40	15-35

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified	AASHTO	inches	inches	4			
							10			
	<i>In</i>				<i>Pct</i>	<i>Pct</i>				
105: Currier-----	0-1	Moderately decomposed plant material	PT							
	1-3	Cobbly ashy sandy loam	SM			0	0	100	100	60-10
	3-9	Very gravelly ashy sandy loam, very gravelly ashy loam, gravelly ashy sandy loam	GM			0-10	15-30	90-100	80-95	35-55
						0-10	0-40	155-75	45-65	30-55
	9-36	Very gravelly ashy sandy loam, extremely gravelly ashy loam, extremely cobbly ashy loam	GM			0-10	0-40	30-60	20-50	15-40
	36-60	Extremely gravelly sandy loam, extremely cobbly sandy loam, extremely cobbly loam	GM, GP-GM			0-15	5-55	20-40	15-35	10-25
106: Currier-----	0-1	Moderately decomposed plant material	PT							
	1-3	Cobbly ashy sandy loam	SM			0	0	100	100	60-10
	3-9	Very gravelly ashy sandy loam, very gravelly ashy loam, gravelly ashy sandy loam	GM			0-10	15-30	90-100	80-95	35-55
						0-10	0-40	155-75	45-65	30-55
	9-36	Very gravelly ashy sandy loam, extremely gravelly ashy loam, extremely cobbly ashy loam	GM			0-10	0-40	30-60	20-50	15-40
	36-60	Extremely gravelly sandy loam, extremely cobbly sandy loam, extremely cobbly loam	GM, GP-GM			0-15	5-55	20-40	15-35	10-25
108: Jimek-----	0-6	Gravelly ashy sandy loam	SM							
	6-10	Very cobbly ashy loam, very gravelly ashy loam	SM			0	0	175-85	55-70	35-45
						0	15-45	170-80	45-55	40-50
	10-25	Extremely cobbly ashy loam	GM			0-10	40-55	50-60	20-45	15-35
	25-38	Extremely cobbly ashy sandy loam	GW-GM, GP, GP-GM			0-25	45-60	15-50	5-35	0-25
	38-48	Unweathered bedrock				---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
112: Natkim-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-8	Gravelly ashly sandy loam	SM	A-2	0-5	5-10	65-95	55-80	40-60
	8-40	Very cobbly ashly sandy loam, very cobbly ashly loam	GM, SM	A-2, A-1, A-4	0-5	30-50	55-70	50-60	35-55
	40-60	Extremely cobbly sandy loam, very cobbly sandy loam	GM, SM	A-1, A-2	0-10	35-55	45-65	35-60	25-45
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---
115: Jimek-----	0-6	Gravelly ashly sandy loam	SM	A-2, A-1	0	0	75-85	55-70	35-45
	6-10	Very cobbly ashly loam, very gravelly ashly loam	SM	A-2	0	15-45	70-80	45-55	40-50
	10-25	Extremely cobbly ashly loam	GM	A-1, A-2	0-10	40-55	50-60	20-45	15-35
	25-38	Extremely cobbly ashly sandy loam	GW-GM, GM, GP	A-1	0-25	45-60	15-50	5-35	0-25
	38-48	Unweathered bedrock			---	---	---	---	---
123: Kaner-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-4	Very gravelly ashly loam	GM	A-2, A-1	0	0	55-60	40-50	30-40
	4-12	Very gravelly ashly loam, gravelly ashly sandy loam	GM, SM	A-2, A-4, A-1	0	0-5	50-80	40-75	30-50
	12-23	Very gravelly ashly loam	GM	A-2, A-1	0-5	0-15	50-60	40-50	30-40
	23-36	Extremely gravelly ashly loam, very gravelly ashly loam	GM, GP-GM	A-1	0-15	0-15	40-50	20-35	15-30
	36-60	Extremely gravelly loam	GM, GP-GM	A-1	0-15	0-15	30-40	15-30	15-20

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
125: Bearrun-----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT	A-8		0	0	100	60-100
	1-7	Ashy sandy loam	SM	A-2, A-4		0	0	95-100	90-100
	7-23	Ashy loam, gravelly ashy clay loam	CL, CL-ML, SC	A-4, A-6		0	0-10	90-100	75-90
	23-45	Clay, silty clay, clay loam	CH, CL	A-7		0	0-10	75-100	70-90
	45-60	Very gravelly clay loam, gravelly clay loam, gravelly clay	GC, CH, CL, SC	A-7		0-2	0-25	50-85	45-80
128: Kafing, north slopes-----	0-2	Slightly decomposed plant material	PT	A-8		0	0	100	60-100
	2-6	Ashy sandy loam	SM	A-4		0	0	95-100	90-100
	6-13	Paragravelly ashy loam, paragravelly ashy clay loam	CL, CL-ML	A-4, A-6		0	0	95-100	90-100
	13-24	Paragravelly clay loam, paragravelly silty clay loam, very paragravelly silty clay loam, very paragravelly clay loam	CL	A-6		0	0	90-100	85-100
	24-60	Very paragravelly clay loam, paracobbly silty clay loam, paragravelly clay loam, paragravelly silty clay loam	CL	A-6		0	0	85-100	75-100
									65-95

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4		
							10	10	40
129: Kafing, south slopes-----	In				Pct	Pct			
	0-2	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-6	Ashy sandy loam	SM	A-4	0	0	95-100	90-100	70-80
	6-13	Paragravelly ashy loam, paragravelly ashy clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	75-90
	13-24	Paragravelly clay loam, paragravelly silty clay loam, very paragravelly silty clay loam, very paragravelly clay loam	CL	A-6	0	0	90-100	85-100	75-95
	24-60	Very paragravelly clay loam, paracobbly silty clay loam, paragravelly clay loam, paragravelly silty clay loam	CL	A-6	0	0	85-100	75-100	65-95
130: Brisky-----									
	0-4	Very cobbly loam	SM, GM	A-4, A-2	0-5	30-45	65-85	60-75	45-60
	4-9	Very cobbly loam	GM, SM	A-2, A-4	0-5	35-60	50-80	45-70	30-55
	9-18	Extremely cobbly loam, very gravelly loam, very cobbly loam, very gravelly sandy loam	GM, SM	A-1, A-2	0-15	5-45	50-70	40-55	25-45
	18-22	Unweathered bedrock			---	---	---	---	---
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-4	Very stony ashy sandy loam	SM	A-2	10-25	15-25	90-100	80-90	65-70
	4-15	Gravelly ashy sandy loam, ashy sandy loam, cobbly ashy sandy loam	SM	A-2	0	0-20	80-95	55-90	35-55
	15-24	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand	GM	A-1	0-5	5-20	45-60	25-55	20-40
131: Kladnick, warm--									
	24-60	Extremely gravelly sand, extremely cobbly sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-45	30-50	25-40	5-15

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	3-10		40
							>10	10	
137: Dumps, mine-----	In				Pct	Pct			
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	0-1	Slightly decomposed plant material	PT	A-8	0	0	0	100	100
	1-4 4-12	Ashy loam Ashy loam, ashy silt loam	ML, ML, CL-ML	A-4 A-4	0 0	0	0	100	100
138: Pits, mine-----	12-24	Loam, clay loam, silt loam	CL	A-6	0	0	0	100	100
	24-34	Clay loam, loam, silty clay loam	CL	A-6	0	0	0	100	100
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC	A-6	0	0-10	155-100	50-100	45-90
	0-1	Slightly decomposed plant material	PT	A-8	0	0	0	100	100
	1-4 4-12	Ashy loam Ashy loam, ashy silt loam	ML, ML, CL-ML	A-4 A-4	0 0	0	0	100	100
141: Nard-----	12-24	Loam, clay loam, silt loam	CL	A-6	0	0	0	100	100
	24-34	Clay loam, loam, silty clay loam	CL	A-6	0	0	0	100	100
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC	A-6	0	0-10	155-100	50-100	45-90
	0-1	Slightly decomposed plant material	PT	A-8	0	0	0	100	100
	1-4 4-12	Ashy loam Ashy loam, ashy silt loam	ML, ML, CL-ML	A-4 A-4	0 0	0	0	100	100
142: Scotties-----	12-24	Loam, clay loam, silt loam	CL	A-6	0	0	0	100	100
	24-34	Clay loam, loam, silty clay loam	CL	A-6	0	0	0	100	100
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC	A-6	0	0-10	155-100	50-100	45-90
	0-1	Slightly decomposed plant material	PT	A-8	0	0	0	100	100
	1-11 11-19	Gravelly ashy loam Gravelly loam, very gravelly sandy loam, very gravelly loam	SM SM, GM	A-2, A-1 A-2, A-1	0 0	0-10 0-10	75-95 150-95	55-75 40-75	35-50 25-50
	19-31	Very gravelly loam, very gravelly sandy loam	GM	A-1, A-2	0-5	10-15	50-65	30-45	20-40
	31-45	Extremely cobbly sandy loam, extremely cobbly loamy sand	GP-GM	A-1	0-5	45-50	30-55	20-40	5-20
	45-49	Bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
144: Nard-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT		0	0	100	100	60-10
	1-4	Ashy loam	ML, CL-ML	A-4	0	0	90-100	85-100	75-95
	4-12	Ashy loam, ashy silt loam	ML, CL-ML	A-4	0	0	90-100	85-100	75-95
	12-24	Loam, clay loam, silt loam	CL	A-6	0	0	90-100	85-100	75-95
	24-34	Clay loam, loam, silty clay loam	CL	A-6	0	0	90-100	85-100	75-95
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC	A-6	0	0-10	55-100	50-100	45-90
146: Nard-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-4	Ashy loam	ML, CL-ML	A-4	0	0	90-100	85-100	75-95
	4-12	Ashy loam, ashy silt loam	ML, CL-ML	A-4	0	0	90-100	85-100	75-95
	12-24	Loam, clay loam, silt loam	CL	A-6	0	0	90-100	85-100	75-95
	24-34	Clay loam, loam, silty clay loam	CL	A-6	0	0	90-100	85-100	75-95
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC	A-6	0	0-10	55-100	50-100	45-90
158: Kiper-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-4	Stony ashy sandy loam	SM	A-4	10-25	0-10	85-95	80-90	55-60
	4-8	Ashy gravelly sandy loam, ashy sandy loam	SM	A-2, A-4	0-5	0	75-95	70-90	45-60
	8-35	Gravelly sandy loam, sandy loam	SM	A-2, A-4	0-5	0	70-95	65-90	40-60
	35-60	Gravelly loamy sand, gravelly sandy loam, sandy loam	SM	A-1, A-2	0-5	0	70-90	65-85	40-55

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--			
			Unified	AASHTO	inches	3-10 inches	4			
							10	10	40	40
159: Ampad, south slopes-----	<i>In</i>					<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	100	60-100
	1-5	Ashy sandy loam	SM			0-5	0-5	100	100	65-75
	5-10	Ashy sandy loam	SM, ML			0-5	0-5	100	100	55-70
	10-29	Sandy loam	SM			0-5	0-5	100	100	45-60
160: Cumulic Haploxerolls----	29-33	Sandy loam, loamy sand	SM			0-5	0-5	100	100	45-60
	33-43	Weathered bedrock				---	---	---	---	---
	0-1	Slightly decomposed plant material	PT			0	0	100	100	60-100
	1-8	Silt loam	CL			0	0	100	100	90-100
	8-53	Silty clay loam, clay loam, silt loam	CL			0	0	95-100	85-100	75-100
161: Rock outcrop----	53-60	Silty clay loam, clay loam, silt loam	CL			0	0	95-100	85-100	75-100
	0-60	Unweathered bedrock				---	---	---	---	---
162: Hakker-----	0-25	Clay loam	ML			0	0-15	90-100	85-100	70-85
	25-44	Very cobbly clay	CL, GC, SC			0-15	35-55	65-85	55-70	50-65
	44-54	Unweathered bedrock				---	---	---	---	---
163: Nard, north slopes-----	0-1	Slightly decomposed plant material	PT			0	0	100	100	60-100
	1-4	Ashy loam	ML, CL-ML			0	0	90-100	85-100	75-95
	4-12	Ashy loam, ashy silt loam	ML, CL-ML			0	0	90-100	85-100	75-95
	12-24	Loam, clay loam, silt loam	CL			0	0	90-100	85-100	75-95
	24-34	Clay loam, loam, silty clay loam	CL			0	0	90-100	85-100	75-95
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC			0	0-10	55-100	50-100	45-90

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
164: Nard-----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-4	Ashy loam	ML, CL-ML	A-4		0	0	90-100	85-100
	4-12	Ashy loam, ashy silt loam	ML, CL-ML	A-4		0	0	90-100	85-100
	12-24	Loam, clay loam, silt loam	CL	A-6		0	0	90-100	85-100
	24-34	Clay loam, loam, silty clay loam	CL	A-6		0	0	90-100	85-100
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC	A-6		0	0-10	55-100	50-100
166: Ampad, warm-----	0-1	Slightly decomposed plant material	PT	A-8		0	0	100	100
	1-5	Ashy sandy loam	SM	A-4		0-5	0-5	100	100
	5-10	Ashy sandy loam	SM, ML	A-4		0-5	0-5	100	100
	10-29	Sandy loam	SM	A-2, A-4		0-5	0-5	100	100
	29-33	Sandy loam, loamy sand	SM	A-2, A-4		0-5	0-5	100	100
	33-43	Weathered bedrock			---	---	---	---	---
167: Keechelus, south slopes-----	0-3	Moderately decomposed plant material	PT	A-8		0	0	100	100
	3-9	Gravelly ashy loam	SC-SM, GC-GM	A-4		5-10	0-5	65-90	55-75
	9-22	Gravelly clay loam, very gravelly clay loam	GC, SC	A-7, A-2		0	0-5	60-70	45-55
	22-35	Very cobbly clay loam, very cobbly clay, very gravelly clay	GC, SC	A-7, A-2		0-10	10-40	55-75	40-60
	35-60	Very gravelly clay loam, GC very gravelly clay, extremely gravelly clay	GC	A-2		0-10	0-20	30-60	20-45

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
167: Nard-----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT			0	0	100	60-100
	1-4	Ashy loam	ML, CL-ML	A-4		0	0	90-100	85-100
	4-12	Ashy loam, ashy silt loam	ML, CL-ML	A-4		0	0	90-100	85-100
	12-24	Loam, clay loam, silt loam	CL	A-6		0	0	90-100	85-100
	24-34	Clay loam, loam, silty clay loam	CL	A-6		0	0	90-100	85-100
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC	A-6		0	0-10	55-100	50-100
Kafing, south slopes-----	0-2	Slightly decomposed plant material	PT	A-8		0	0	100	60-100
	2-6	Ashy sandy loam	SM	A-4		0	0	95-100	90-100
	6-13	Paragravelly ashy loam, paragravelly ashy clay loam	CL, CL-ML	A-4, A-6		0	0	95-100	90-100
	13-24	Paragravelly clay loam, CL paragravelly silty clay loam, very paragravelly loam, very paragravelly silty clay loam, very paragravelly clay loam	CL	A-6		0	0	90-100	85-100
	24-60	Very paragravelly clay loam, paracobbly silty clay loam, paragravelly silty clay loam, paragravelly clay loam	CL	A-6		0	0	85-100	75-100
168: Keechelus, north slopes-----	0-3	Moderately decomposed plant material	PT	A-8		0	0	100	60-100
	3-9	Gravelly ashy loam	SC-SM, GC-GM	A-4		5-10	0-5	65-90	55-75
	9-22	Gravelly clay loam, very gravelly clay loam	GC, SC	A-7, A-2		0	0-5	60-70	45-55
	22-35	Very cobbly clay loam, very cobbly clay, very gravelly clay	GC, SC	A-7, A-2		0-10	10-40	55-75	40-60
	35-60	Very gravelly clay loam, GC very gravelly clay, extremely gravelly clay	GC	A-2		0-10	0-20	30-60	20-45

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4		
							10	10	40
168: Nard-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT		0	0	100	100	60-10
	1-4	Ashy loam	ML, CL-ML		0	0	90-100	85-100	75-95
	4-12	Ashy loam, ashy silt loam	ML, CL-ML		0	0	90-100	85-100	75-95
	12-24	Loam, clay loam, silt loam	CL		0	0	90-100	85-100	75-95
	24-34	Clay loam, loam, silty clay loam	CL		0	0	90-100	85-100	75-95
	34-60	Clay loam, loam, gravelly clay loam	CL, GC, SC		0	0-10	55-100	50-100	45-90
Kafing, north slopes-----	0-2	Slightly decomposed plant material	PT		0	0	100	100	60-10
	2-6	Ashy sandy loam	SM		0	0	95-100	90-100	70-80
	6-13	Paragravelly ashy loam, paragravelly ashy clay loam	CL, CL-ML		0	0	95-100	90-100	75-90
	13-24	Paragravelly clay loam, paragravelly silty clay loam, very paragravelly loam, very paragravelly silty clay loam, very paragravelly clay loam							
	24-60	Very paragravelly clay loam, paracobbly silty clay loam, paragravelly silty clay loam, paragravelly clay loam	CL		0	0	85-100	75-100	65-95
170: Ampad-----	0-1	Slightly decomposed plant material	PT		0	0	100	100	60-10
	1-5	Ashy sandy loam	SM		0-5	0-5	100	100	65-75
	5-10	Ashy sandy loam	SM, ML		0-5	0-5	100	100	55-70
	10-29	Sandy loam	SM		0-5	0-5	100	100	45-60
	29-33	Sandy loam, loamy sand	SM		0-5	0-5	100	100	45-60
	33-43	Weathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
175: Keechelus-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-3	Moderately decomposed plant material	PT			0	0	100	60-100
	3-9	Gravelly ashly loam	SC-SM, GC-GM	A-4	5-10	0-5	65-90	55-75	45-65
	9-22	Gravelly clay loam, very gravelly clay loam	GC, SC	A-7, A-2	0	0-5	60-70	45-55	40-50
	22-35	Very cobbly clay loam, very cobbly clay, very gravelly clay	GC, SC	A-7, A-2	0-10	10-40	55-75	40-60	35-50
	35-60	Very gravelly clay loam, GC very gravelly clay, extremely gravelly clay	GC	A-2	0-10	0-20	30-60	20-45	20-40
176: Keechelus, south slopes-----	0-3	Moderately decomposed plant material	PT			0	0	100	60-100
	3-9	Gravelly ashly loam	SC-SM, GC-GM	A-4	5-10	0-5	65-90	55-75	45-65
	9-22	Gravelly clay loam, very gravelly clay loam	GC, SC	A-7, A-2	0	0-5	60-70	45-55	40-50
	22-35	Very cobbly clay loam, very cobbly clay, very gravelly clay	GC, SC	A-7, A-2	0-10	10-40	55-75	40-60	35-50
	35-60	Very gravelly clay loam, GC very gravelly clay, extremely gravelly clay	GC	A-2	0-10	0-20	30-60	20-45	20-40
177: Keechelus, north slopes-----	0-3	Moderately decomposed plant material	PT			0	0	100	60-100
	3-9	Gravelly ashly loam	SC-SM, GC-GM	A-4	5-10	0-5	65-90	55-75	45-65
	9-22	Gravelly clay loam, very gravelly clay loam	GC, SC	A-7, A-2	0	0-5	60-70	45-55	40-50
	22-35	Very cobbly clay loam, very cobbly clay, very gravelly clay	GC, SC	A-7, A-2	0-10	10-40	55-75	40-60	35-50
	35-60	Very gravelly clay loam, GC very gravelly clay, extremely gravelly clay	GC	A-2	0-10	0-20	30-60	20-45	20-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
180: Nimue-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-2	Highly decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-4	Ashy sandy loam	SM	A-4	0	0	90-100	90-100	60-85
	4-7	Ashy sandy loam, gravelly ashy sandy loam	SM	A-4, A-2, A-1	0	0	65-95	55-90	35-75
	7-12	Ashy sandy loam, gravelly ashy sandy loam	SM	A-4, A-1, A-2	0	0	65-95	55-85	35-65
	12-26	Very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam	GM, GP-GM	A-1, A-2	0-5	0-35	30-60	15-50	10-40
	26-60	Extremely gravelly silt loam, very gravelly sandy loam, extremely gravelly loam	GM, GP-GM	A-1, A-2	0-10	10-30	25-60	10-40	10-40
	0-2	Highly decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-4	Ashy sandy loam	SM	A-4	0	0	90-100	90-100	60-85
	4-7	Ashy sandy loam, gravelly ashy sandy loam	SM	A-4, A-1, A-2	0	0	65-95	55-90	35-75
181: Nimue-----	7-12	Ashy sandy loam, gravelly ashy sandy loam	SM	A-4, A-2, A-1	0	0	65-95	55-85	35-65
	12-26	Very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam	GM, GP-GM	A-1, A-2	0-5	0-35	30-60	15-50	10-40
	26-60	Extremely gravelly silt loam, very gravelly sandy loam, extremely gravelly loam	GM, GP-GM	A-1, A-2	0-10	10-30	25-60	10-40	10-40
	0-2	Highly decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-4	Ashy sandy loam	SM	A-4	0	0	90-100	90-100	60-85
	4-7	Ashy sandy loam, gravelly ashy sandy loam	SM	A-4, A-1, A-2	0	0	65-95	55-90	35-75
	7-12	Ashy sandy loam, gravelly ashy sandy loam	SM	A-4, A-2, A-1	0	0	65-95	55-85	35-65
	12-26	Very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam	GM, GP-GM	A-1, A-2	0-5	0-35	30-60	15-50	10-40
	26-60	Extremely gravelly silt loam, very gravelly sandy loam, extremely gravelly loam	GM, GP-GM	A-1, A-2	0-10	10-30	25-60	10-40	10-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-								
			Unified	AASHTO	inches	>10 inches	3-10 inches	4			10	40			
								Pct	Pct						
182: Haywire-----	In						Pct	Pct							
	0-1	Moderately decomposed plant material	PT					0	0	100	100	60-10			
	1-3	Ashy sandy loam	SM					0	0	90-100	85-100	50-65			
	3-10	Medial loam, gravelly medial loam, gravelly medial sandy loam	SM					0	0	75-95	60-90	40-80			
	10-18	Gravelly medial loam, medial loam, gravelly medial sandy loam	SM					0	0-15	75-95	60-90	40-80			
	18-26	Very cobbly medial loam, very gravelly medial loam	GM, SM					0-5	10-30	55-75	50-65	40-55			
	26-38	Extremely cobbly loam, extremely gravelly loam, very gravelly silt loam	GM					0-15	15-45	30-60	20-50	15-40			
	38-48	Unweathered bedrock					---	---	---	---	---	---			
	183: Haywire-----	0-1	Moderately decomposed plant material	PT					0	0	100	100	60-10		
		1-3	Ashy sandy loam	SM					0	0	90-100	85-100	50-65		
3-10		Medial loam, gravelly medial loam, gravelly medial sandy loam	SM					0	0	75-95	60-90	40-80			
10-18		Gravelly medial loam, medial loam, gravelly medial sandy loam	SM					0	0-15	75-95	60-90	40-80			
18-26		Very cobbly medial loam, very gravelly medial loam	GM, SM					0-5	10-30	55-75	50-65	40-55			
26-38		Extremely cobbly loam, extremely gravelly loam, very gravelly silt loam	GM					0-15	15-45	30-60	20-50	15-40			
38-48		Unweathered bedrock					---	---	---	---	---	---			

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							4	10	40
185: Andic Dystrocrepts--	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-5	Stony ash sandy loam	SM			10-25	0-15	175-100	65-90
	5-11	Very gravelly ash sandy loam, very cobbly ash sandy loam	SM	A-4 A-2, A-1, A-4	0-5	15-40	60-80	45-55	35-50
	11-26	Extremely cobbly sandy loam, extremely cobbly loam, extremely gravelly sandy loam	GM	A-1, A-2	0-25	15-55	40-65	20-40	15-35
	26-36	Unweathered bedrock			---	---	---	---	---
186: Stirrup-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-4	Ashy sandy loam	SM	A-2	0	0	90-100	80-100	50-65
	4-8	Gravelly medial sandy loam, medial loam, gravelly medial loam	SM, ML	A-4, A-2	0	0-15	170-95	60-90	45-75
	8-24	Very gravelly medial loam, very gravelly medial sandy loam, very cobbly medial sandy loam	GM	A-2, A-1	0	0-50	45-60	35-55	20-40
	24-36	Extremely gravelly medial sandy loam, extremely cobbly medial sandy loam, very gravelly medial sandy loam	GP-GM, GM	A-1	0-15	0-55	20-45	15-35	10-25
	36-43	Extremely gravelly sandy loam, extremely cobbly sandy clay loam	GP-GC, GM	A-2	0-5	30-70	10-55	5-45	5-35
	43-53	Unweathered bedrock			---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--				
			Unified	AASHTO	inches	inches	4	10	40		
	<i>In</i>					<i>Pct</i>	<i>Pct</i>				
187:											
Chinkmin-----	0-1	Moderately decomposed plant material	PT		A-8		0	0	100	100	60-10
	1-2	Highly decomposed plant material	PT		A-8		0	0	100	100	60-10
	2-5	Ashy sandy loam	SM		A-2, A-4		0	0-5	90-100	85-100	55-70
	5-11	Cobbly medial loam, gravelly medial loam, gravelly medial sandy loam, medial loam	OL		A-4		0	0-20	80-95	75-90	60-80
	11-16	Cobbly medial loam, very gravelly medial loam, gravelly medial silt loam, gravelly medial loam	SM		A-2, A-4, A-1		0	0-20	55-85	45-75	30-60
	16-23	Very cobbly medial sandy loam, very cobbly medial loam, very gravelly medial sandy loam	GM, SM		A-2, A-1		0-5	0-30	45-70	35-55	25-45
	23-33	Very gravelly medial sandy loam, very cobbly medial sandy loam, very gravelly sandy loam	GM, SM		A-1, A-2		0-25	15-30	35-70	25-55	20-45
	33-41	Cemented material					---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
188: Chinkmin-----	<i>In</i>					<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-2	Highly decomposed plant material	PT			0	0	100	100
	2-5	Ashy sandy loam	SM			0	0-5	90-100	85-100
	5-11	Cobbly medial loam, gravelly medial loam, gravelly medial sandy loam, medial loam	OL			0	0-20	80-95	75-90
	11-16	Cobbly medial loam, gravelly medial silt loam, very gravelly medial loam, gravelly medial loam	SM			0	0-20	55-85	45-75
	16-23	Very cobbly medial sandy loam, very cobbly medial loam, very gravelly medial sandy loam	GM, SM			0-5	0-30	45-70	35-55
	23-33	Very gravelly medial sandy loam, very cobbly medial sandy loam, very gravelly sandy loam	GM, SM			0-25	15-30	35-70	25-55
	33-41	Cemented material				---	---	---	---
	0-2	Highly decomposed plant material	PT			0	0	100	100
190: Nimue-----	2-4	Ashy sandy loam	SM			0	0	90-100	90-100
	4-7	Ashy sandy loam, gravelly ashy sandy loam	SM			0	0	65-95	55-90
	7-12	Ashy sandy loam, gravelly ashy sandy loam	SM			0	0	65-95	55-85
	12-26	Very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam	GM, GP-GM			0-5	0-35	30-60	15-50
	26-60	Extremely gravelly silt loam, very gravelly sandy loam, extremely gravelly loam	GM, GP-GM			0-10	10-30	25-60	10-40
	0-60	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	inches		4
							>10	3-10	
191: Sutkin-----	In					Pct	Pct		
	0-1	Slightly decomposed plant material	PT	A-8			0	0	100
	1-11	Stony loam	ML	A-4			5-10	0-10	85-95
	11-39	Extremely cobbly loam, very cobbly loam, very gravelly loam	GC, GC-GM, SC, SC-SM	A-2, A-4, A-6			0-10	15-40	40-70
	39-60	Extremely cobbly loam, very cobbly clay loam, very cobbly loam	GC, GC-GM, SC, SC-SM	A-4, A-6			0-10	45-60	55-75
194: Osborn-----	0-1	Slightly decomposed plant material	PT	A-8			0	0	100
	1-9	Ashy sandy loam	SM	A-4			0	0	90-100
	9-16	Sandy loam, loam, gravelly sandy loam	SM, ML	A-4, A-2			0	0	75-100
	16-33	Paragravelly sandy loam, paragravelly loam	SM, ML, CL- ML, SC-SM	A-4			0	0	90-100
	33-42	Weathered bedrock					---	---	---
Scotties-----	0-1	Slightly decomposed plant material	PT	A-8			0	0	100
	1-11	Gravelly ashly loam	SM	A-2, A-1			0	0-10	75-95
	11-19	Gravelly loam, very gravelly sandy loam, very gravelly loam	SM, GM	A-2, A-1			0	0-10	50-95
	19-31	Very gravelly loam, very gravelly sandy loam	GM	A-1, A-2			0-5	10-15	50-65
	31-45	Extremely cobbly sandy loam, extremely cobbly loamy sand	GP-GM	A-1			0-5	45-50	30-55
45-49	Bedrock						---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	40	
194: Chapot-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-7	Very gravelly ash sandy loam	GM		0-5	5-25	50-60	40-50	20-40
	7-15	Gravelly loam, very gravelly loam, gravelly sandy loam	GM		0-5	5-25	50-75	40-65	30-55
	15-25	Extremely gravelly loam, very gravelly loam, extremely cobbly loam	GC-GM		0-5	25-45	40-70	30-60	20-50
	25-60	Extremely gravelly clay loam, very gravelly loam, extremely cobbly clay loam, very gravelly clay loam	GC		0-10	25-45	30-60	20-50	10-40
195: Scotties-----	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-11	Gravelly ash loam	SM		0	0-10	75-95	55-75	35-50
	11-19	Gravelly loam, very gravelly sandy loam, very gravelly loam	SM, GM		0	0-10	50-95	40-75	25-50
	19-31	Very gravelly loam, very gravelly sandy loam	GM		0-5	10-15	50-65	30-45	20-40
	31-45	Extremely cobbly sandy loam, extremely cobbly loamy sand	GP-GM		0-5	45-50	30-55	20-40	5-20
	45-49	Bedrock			---	---	---	---	---
Chapot-----	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-7	Very gravelly ash sandy loam	GM		0-5	5-25	50-60	40-50	20-40
	7-15	Gravelly loam, very gravelly loam, gravelly sandy loam	GM		0-5	5-25	50-75	40-65	30-55
	15-25	Extremely gravelly loam, very gravelly loam, extremely cobbly loam	GC-GM		0-5	25-45	40-70	30-60	20-50
	25-60	Extremely gravelly clay loam, very gravelly loam, extremely cobbly clay loam, very gravelly clay loam	GC		0-10	25-45	30-60	20-50	10-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
195: Rock outcrop----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-60	Unweathered bedrock			---	---	---		
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-8	Ashy sandy loam	SM	A-4	0	0	95-100	90-100	60-70
	8-15	Ashy sandy loam	SM	A-4	0	0	95-100	90-100	60-70
	15-37	Loam, gravelly loam	SC-SM	A-4	0	0	70-95	60-90	50-70
	37-49	Gravelly loam, very gravelly sandy loam, gravelly sandy loam	GM, SM, GC- GM, SC-SM	A-2, A-1, A-4	0-5	0-20	45-80	35-70	20-55
203: Teaway-----	49-60	Gravelly loam, extremely gravelly loamy sand, extremely gravelly sandy loam, very gravelly sandy loam	GM, GC-GM, GP-GM	A-1, A-2, A-4	0-5	0-25	30-70	20-60	10-45
	0-3	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	3-7	Ashy loam	ML	A-4	0	0	100	100	90-95
	7-22	Loam, silt loam	ML	A-4	0	0	90-100	85-100	75-95
	22-42	Loam, clay loam, silt loam	CL	A-6	0	0	90-100	85-100	75-95
	42-51	Loam, clay loam, gravelly clay loam, gravelly loam	CL, SC	A-6	0	0	85-100	75-100	65-90
	51-60	Gravelly loam, clay loam, loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-10	75-100	65-100	55-90
204: Teaway-----	0-3	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	3-7	Ashy loam	ML	A-4	0	0	100	100	90-95
	7-22	Loam, silt loam	ML	A-4	0	0	90-100	85-100	75-95
	22-42	Loam, clay loam, silt loam	CL	A-6	0	0	90-100	85-100	75-95
	42-51	Loam, clay loam, gravelly clay loam, gravelly loam	CL, SC	A-6	0	0	85-100	75-100	65-90
	51-60	Gravelly loam, clay loam, loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-10	75-100	65-100	55-90

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
205: Xerofluvents----	In				Pct	Pct			
	0-2	Moderately decomposed plant material	PT			0	0	100	100
	2-20	Sandy loam							
	20-23	Loamy sand, very cobbly	SM, SC-SM	A-4, A-2	0	0	85-100	75-100	40-80
		loamy sand, very	SM	A-1, A-2	0-5	0-25	70-100	50-85	25-45
		gravelly loamy sand,							
		gravelly loamy sand							
206: Dystroxerepts, south slopes----	23-60	Extremely cobbly sand,	GP-GM, GM,	A-1	0-10	5-50	40-70	30-55	20-40
		very gravelly loamy	SM, SP-SM						
		sand, extremely							
		gravelly sand							
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	100
	1-7	Ashy sandy loam	SM	A-4, A-2	0	0	90-100	80-100	45-75
	7-18	Gravelly ash loam,	SM	A-2, A-1, A-4	0	0	65-80	50-75	35-55
		gravelly ashy sandy							
		clay loam, ashy sandy							
		clay loam, gravelly							
		ashy sandy loam							
207: Quicksell-----	18-60	Very gravelly sandy	GC-GM, GC	A-2, A-1, A-4	0-1	10-50	35-70	25-55	20-50
		loam, very cobbly sandy							
		clay loam, very cobbly							
		loam, extremely							
		gravelly loamy sand							
	0-5	Loam	CL-ML	A-4	0	0	100	90-100	75-80
	5-20	Clay loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	75-90
	20-43	Clay	MH, CH	A-7	0	0	95-100	85-100	75-90
	43-60	Clay loam, clay,	CL	A-7	0	0	90-100	70-100	65-90
		gravelly clay							

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
208: Patnish-----	In				Pct	Pct			
	0-7	Ashy loam	CL, CL-ML	A-4	0	0	95-100	85-100	75-95
	7-14	Ashy loam, ashy sandy loam, ashy sandy clay loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	75-100	65-95
	14-27	Loam, sandy loam, sandy clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-5	85-100	75-100	65-95
	27-35	Very gravelly sandy loam, gravelly sandy loam, gravelly sandy clay loam	SC, GC-GM, GC, SC-SM	A-2, A-4, A-6	0	0-30	55-85	45-75	35-65
	35-60	Extremely cobbly loamy sand, extremely gravelly sand, extremely cobbly sand	GM, GC-GM, GP-GM	A-1	0-5	35-65	30-50	20-40	15-30
Mippon-----	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-12	Very cobbly loam	GM, SM	A-4, A-2	0-10	25-60	60-80	45-75	40-60
	12-18	Very gravelly sandy loam, very cobbly loam, very cobbly loamy sand	GM, GP-GM	A-1	0-10	0-45	40-60	25-50	10-30
	18-60	Extremely cobbly loamy sand, extremely gravelly sand, very cobbly sand	GW-GM, GP-GM, SP, SP-SM	A-1	0-10	10-60	25-75	15-45	10-40
	0-6	Ashy sandy clay loam	CL	A-6, A-7	0	0	95-100	85-100	80-10
	6-22	Ashy sandy clay loam, ashy clay loam	CL	A-6, A-7	0	0	95-100	85-100	80-10
Myzel-----	22-38	Ashy sandy clay loam, ashy clay loam	CL	A-6, A-7	0	0	95-100	85-100	80-10
	38-57	Sandy clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	85-100	75-100	70-10
	57-60	Sandy clay loam, gravelly sandy clay loam, very gravelly sandy clay loam	SC, CL, GC	A-6, A-2, A-7	0-5	0-25	50-100	40-95	30-90

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number-						
			Unified	AASHTO	>10 inches	3-10 inches	4			10	40		
210: Dystroxerepts----	In					Pct	Pct						
	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100	60-100			
	1-7	Very cobbly ashy loam	GM	A-4, A-2		0	30-40	50-75	40-65	30-55			
	7-18	Gravelly ashy loam, gravelly ashy sandy	SM	A-2, A-1, A-4		0	0	65-80	50-75	35-55			
		clay loam, ashy sandy clay loam, gravelly ashy sandy loam											
211: Teanaway-----	18-60	Very gravelly sandy loam, very cobbly sandy clay loam, very cobbly loam, extremely gravelly loamy sand	GC-GM, GC	A-2, A-1, A-4		0-1	10-50	35-70	25-55	20-50			
	0-3	Moderately decomposed plant material	PT	A-8		0	0	100	100	60-100			
	3-7	Ashy loam	ML	A-4		0	0	100	100	90-95			
	7-22	Loam, silt loam	ML	A-4		0	0	90-100	85-100	75-95			
	22-42	Loam, clay loam, silt loam	CL	A-6		0	0	90-100	85-100	75-95			
213: Roslyn, moist----	42-51	Loam, clay loam, gravelly clay loam, gravelly loam	CL, SC	A-6		0	0	85-100	75-100	65-90			
	51-60	Gravelly loam, clay loam, loam, gravelly clay loam	CL, SC	A-6, A-7		0	0-10	75-100	65-100	55-90			
	0-1	Moderately decomposed plant material	PT	A-8		0	0	100	100	60-100			
	1-8	Ashy sandy loam	SM	A-4		0	0	95-100	90-100	60-70			
	8-15	Ashy sandy loam	SM	A-4		0	0	95-100	90-100	60-70			
214: Haplosaprists----	15-37	Loam, gravelly loam	SC-SM	A-4		0	0	70-95	60-90	50-70			
	37-60	Gravelly loam, loam, cobbly loam	SC	A-4, A-6, A-2		0-5	0-25	65-95	55-85	40-65			
	0-8	Muck	PT	A-8		0	0	100	100	85-100			
	8-20	Muck	PT	A-8		0	0	100	100	85-100			
	20-43	Muck	PT	A-8		0	0	100	100	85-100			
	43-60	Silty clay loam, silt loam, sandy loam	CL, CL-ML, SC, SC-SM	A-6, A-4		0	0	85-100	75-100	60-95			

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	inches		
							>10	3-10	4
	<i>In</i>					<i>Pct</i>			
216: Roxer-----									
	0-1	Moderately decomposed plant material	PT				0	0	100
	1-8	Gravelly ashy sandy loam	SM				0	0-15	80-90
	8-33	Very gravelly loam, gravelly ashy loam	GM	A-4, A-2 A-2			0-5	5-30	65-80 50-65
	33-44	Very cobbly loam, very gravelly loam	GM	A-2, A-4			0-5	25-40	40-60 50-65
	44-60	Very cobbly loam, very gravelly loam	GM	A-2			0-15	25-40	40-60 50-65
217: Roxer-----									
	0-1	Moderately decomposed plant material	PT	A-8			0	0	100
	1-8	Gravelly ashy sandy loam	SM	A-4, A-2			0	0-15	80-90
	8-33	Very gravelly loam, gravelly ashy loam	GM	A-2			0-5	5-30	65-80 50-65
	33-44	Very cobbly loam, very gravelly loam	GM	A-2, A-4			0-5	25-40	40-60 50-65
	44-60	Very cobbly loam, very gravelly loam	GM	A-2			0-15	25-40	40-60 50-65
218: Bograp-----									
	0-4	Moderately decomposed plant material	PT	A-8			0	0	100
	4-12	Ashy sandy loam	SM	A-2			0	0-15	80-90
	12-19	Ashy loam, ashy sandy loam	SC-SM, ML	A-4			0	5-30	65-80 50-65
	19-28	Gravelly loam, loam	ML, CL-ML, SC-SM, SM	A-4			0-5	25-40	40-60 50-65
	28-64	Cobbly clay loam, clay loam, gravelly clay loam	CL, SC	A-6			0-5	25-40	40-60 50-65
220: Roxer, basalt substratum-----									
	0-1	Moderately decomposed plant material	PT	A-8			0	0	100
	1-8	Gravelly ashy sandy loam	SM	A-4, A-2			0	0-15	80-90
	8-33	Very gravelly loam, gravelly ashy loam	GM	A-2			0-5	5-30	65-80 50-65
	33-44	Very cobbly loam, very gravelly loam	GM	A-2, A-4			0-5	25-40	40-60 50-65
	44-51	Unweathered bedrock					---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	inches	4		
							10	10	40
220: Roxer-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-8	Gravelly ashly sandy loam	SM			0	0-15	80-90	65-80
	8-33	Very gravelly loam, gravelly ashly loam	GM			0-5	5-30	50-65	40-60
	33-44	Very cobbly loam, very gravelly loam	GM			0-5	25-40	50-65	40-60
	44-60	Very cobbly loam, very gravelly loam	GM			0-15	25-40	50-65	40-60
222: Ampad, north slopes-----									
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-5	Ashy sandy loam	SM			0-5	0-5	100	100
	5-10	Ashy sandy loam	SM, ML			0-5	0-5	100	100
	10-29	Sandy loam	SM			0-5	0-5	100	100
	29-33	Sandy loam, loamy sand	SM			0-5	0-5	100	100
226: Bograp-----	33-43	Weathered bedrock				---	---	---	---
	0-4	Moderately decomposed plant material	PT			0	0	100	100
	4-12	Ashy sandy loam	SM			0	0	90-100	85-100
	12-19	Ashy loam, ashly sandy loam	SC-SM, ML			0	0	90-100	85-100
	19-28	Gravelly loam, loam	ML, CL-ML, SC-SM, SM			0-5	0-5	70-95	65-90
	28-64	Cobbly clay loam, clay loam, gravelly clay loam	CL, SC			0-5	5-25	70-90	65-80

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	
227: Jummer-----	In				Pct	Pct				
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-100	
	1-4	Very gravelly ashy sandy loam	SM	A-2, A-1	0-5	5-25	75-80	40-55	30-45	
	4-7	Very gravelly ashy sandy loam, gravelly ashy sandy loam, gravelly ashy loam	SM	A-2, A-1	0-5	5-25	75-90	40-60	30-55	
	7-21	Very gravelly ashy sandy loam, very gravelly ashy loam	SM	A-2, A-1	0-5	5-25	75-80	40-55	30-45	
	21-34	Extremely gravelly loam, extremely cobbly loam	GM	A-1	0-10	25-55	50-60	30-40	20-30	
	34-44	Unweathered bedrock			---	---	---	---	---	
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100	
	1-5	Gravelly ashy loam	GM, GC-GM	A-4	0-10	0-15	60-80	55-70	50-60	
	5-14	Cobbly ashy loam, very cobbly ashy loam, very gravelly ashy sandy loam	SM, GC-GM, GM, SC-SM	A-4, A-2	0-5	15-35	60-85	50-75	35-70	
Rock outcrop-----	14-30	Very cobbly loam, very gravelly loam, very gravelly sandy loam	SM, GM, SC- SM, GC-GM	A-2, A-4, A-1	0-5	25-40	55-80	45-60	30-55	
	30-60	Very cobbly loam, very- gravelly clay loam, extremely gravelly sandy clay loam	GC, GC-GM	A-2, A-1	0-10	25-45	40-75	20-55	10-50	
	0-60	Unweathered bedrock			---	---	---	---	---	
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-100	
	1-8	Gravelly ashy sandy loam	SM	A-2	0-5	5-10	65-95	55-80	40-60	
	8-40	Very cobbly ashy sandy loam, very cobbly ashy loam	GM, SM	A-2, A-1, A-4	0-5	30-50	55-70	50-60	35-55	
	40-60	Extremely cobbly sandy loam, very cobbly sandy loam	GM, SM	A-1, A-2	0-10	35-55	45-65	35-60	25-45	
	228: Natkim-----									

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	inches	4		
							10	10	40
229: Natkim-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-8	Gravelly ashly sandy loam	SM		0-5	5-10	65-95	55-80	40-60
	8-40	Very cobbly ashly sandy loam, very cobbly ashly loam	GM, SM		0-5	30-50	55-70	50-60	35-55
	40-60	Extremely cobbly sandy loam, very cobbly sandy loam	GM, SM		0-10	35-55	45-65	35-60	25-45
230: Rock outcrop-----	0-60	Unweathered bedrock			---	---	---	---	---
	0-1	Moderately decomposed plant material	PT		0	0	100	100	60-10
	1-8	Gravelly ashly sandy loam	SM		0	0-15	80-90	65-80	55-70
	8-33	Very gravelly loam, gravelly ashly loam	GM		0-5	5-30	50-65	40-60	35-50
	33-44	Very cobbly loam, very gravelly loam	GM		0-5	25-40	50-65	40-60	35-55
	44-60	Very cobbly loam, very gravelly loam	GM		0-15	25-40	50-65	40-60	35-50
232: Vabus-----	0-4	Moderately decomposed plant material	PT			0	0	100	60-10
	4-7	Very stony ashly sandy loam	SM		15-25	0-15	70-95	65-90	45-65
	7-13	Ashy sandy loam	SM						
	13-18	Very gravelly ashly sandy loam, very gravelly ashly loam, very cobbly ashly sandy loam	GM		0	0	85-95	80-90	50-75
	18-35	Very gravelly ashly sandy loam, extremely gravelly ashly sandy loam, extremely cobbly ashly sandy loam	GM		0-5	0-30	40-55	30-50	20-40
	35-60	Very gravelly loamy sand, very cobbly sandy loam, extremely gravelly loamy sand, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM		0-10	5-50	40-60	30-50	15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	inches		
							>10	3-10	4
	<i>In</i>					<i>Pct</i>			
233: Natkim-----									
	0-1	Slightly decomposed plant material	PT				0	0	100
	1-8	Gravelly ashly sandy loam	SM						
	8-40	Very cobbly ashly sandy loam, very cobbly ashly loam	GM, SM	A-2 A-2, A-1, A-4	0-5 0-5	5-10 30-50	65-95 55-70	55-80 50-60	40-60 35-55
	40-60	Extremely cobbly sandy loam, very cobbly sandy loam	GM, SM	A-1, A-2	0-10	35-55	45-65	35-60	25-45
234: Kladnick-----									
	0-1	Moderately decomposed plant material	PT				0	0	100
	1-9	Ashy sandy loam	SM	A-4	0				
	9-15	Gravelly ashly sandy loam, ashly sandy loam, cobbly ashly sandy loam	SM	A-2	0	0-20	80-95	55-90	35-55
	15-24	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand	GM	A-1	0-5	5-20	45-60	25-55	20-40
237: Kladnick-----									
	0-1	Moderately decomposed plant material	PT				0	0	100
	1-9	Ashy sandy loam	SM	A-4	0				
	9-15	Gravelly ashly sandy loam, ashly sandy loam, cobbly ashly sandy loam	SM	A-2	0	0-20	80-95	55-90	35-55
	15-24	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand	GM	A-1	0-5	5-20	45-60	25-55	20-40
24-60									
		Extremely gravelly sand, extremely cobbly sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-45	30-50	25-40	5-15
24-60									
		Extremely gravelly sand, extremely cobbly sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-45	30-50	25-40	5-15

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
238: Racker-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	1-5	Ashy sandy loam	SM	A-4, A-2	0	0-10	80-95	75-90	50-65
	5-12	Gravelly ashly sandy loam	SM	A-2, A-1	0	0-10	70-90	60-75	40-50
	12-31	Very cobbly loamy sand, very gravelly loamy sand	SM, GM	A-1	0-15	5-40	50-80	40-70	20-50
241: Thetis-----	31-60	Very cobbly loamy sand, extremely cobbly sand	SM, GP-GM, GM, SP-SM	A-1	0-25	30-50	45-80	35-70	15-50
	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	2-6	Ashy sandy loam	ML	A-4	0	0	90-100	85-95	75-90
	6-12	Gravelly ashly sandy loam	SM	A-2, A-1	0	0	60-80	55-75	35-50
	12-48	Very gravelly ashly sandy loam, very cobbly ashly sandy loam, extremely cobbly ashly sandy loam	GM, SM	A-1	0-5	10-60	45-65	40-60	25-35
242: Roxer-----	48-60	Very gravelly sandy loam, very cobbly sandy loam, extremely cobbly sandy loam	GM, SM	A-1	0-20	10-65	45-65	40-60	25-35
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	1-8	Gravelly ashly sandy loam	SM	A-4, A-2	0	0-15	80-90	65-80	55-70
	8-33	Very gravelly loam, gravelly ashly loam	GM	A-2	0-5	5-30	50-65	40-60	35-50
	33-44	Very cobbly loam, very gravelly loam	GM	A-2, A-4	0-5	25-40	50-65	40-60	35-55
	44-60	Very cobbly loam, very gravelly loam	GM	A-2	0-15	25-40	50-65	40-60	35-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4	10	40
251: Domerie, stony surface-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-4	Gravelly ash sandy loam	SM	A-2, A-1	0-10	5-10	60-75	50-65	30-45
	4-9	Channery ash sandy loam, very channery	SM	A-2, A-1	0-10	5-20	60-75	50-65	30-45
		ashy sandy loam, channery ash loam							
	9-34	Very channery ash sandy loam, very flaggy ash loam	GM	A-1, A-2	0-10	25-45	35-55	30-50	15-40
	34-41	Extremely channery ash sandy loam, very flaggy ashy loam	GM, GP-GM	A-1, A-2	0-15	25-45	25-50	15-50	10-45
	41-56	Extremely channery sandy loam, very channery loam	GM, GC-GM, GP-GM	A-1, A-2	0-15	25-45	25-50	15-50	10-45
Rock outcrop----- 252: Domerie, south slopes, stony surface-----	56-60	Unweathered bedrock			---	---	---	---	---
	0-60	Unweathered bedrock			---	---	---	---	---
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-4	Gravelly ash sandy loam	SM	A-2, A-1	0-10	5-10	60-75	50-65	30-45
	4-9	Channery ash sandy loam, very channery ashy sandy loam, channery ash loam	SM	A-2, A-1	0-10	5-20	60-75	50-65	30-45
	9-34	Very channery ash sandy loam, very flaggy ash loam	GM	A-1, A-2	0-10	25-45	35-55	30-50	15-40
	34-41	Extremely channery ash sandy loam, very flaggy ashy loam	GM, GP-GM	A-1, A-2	0-15	25-45	25-50	15-50	10-45
	41-56	Extremely channery sandy loam, very channery loam	GM, GC-GM, GP-GM	A-1, A-2	0-15	25-45	25-50	15-50	10-45
	56-60	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-		
			Unified	AASHTO	inches	Pct	sieve number-		
							4	10	40
253: Domerie, north slopes, stony surface-----	<i>In</i>					<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	60-10
	1-4	Gravelly ashly sandy loam	SM		0-10	5-10	60-75	50-65	30-45
	4-9	Channery ashly sandy loam, very channery	SM		0-10	5-20	60-75	50-65	30-45
		ashly sandy loam, channery ashly loam							
	9-34	Very channery ashly sandy loam, very flaggy ashly loam	GM		0-10	25-45	35-55	30-50	15-40
	34-41	Extremely channery ashly sandy loam, very flaggy ashly loam	GM, GP-GM		0-15	25-45	25-50	15-50	10-45
254: Kachess-----	41-56	Extremely channery sandy loam, very channery loam	GM, GC-GM, GP-GM		0-15	25-45	25-50	15-50	10-45
	56-60	Unweathered bedrock			---	---	---	---	---
	0-2	Slightly decomposed plant material	PT		0	0	100	100	60-10
	2-10	Gravelly ashly sandy loam	SM		0	0-10	80-90	65-75	40-50
	10-30	Very gravelly ashly loam, very cobbly ashly loam	GM, SM		0-5	15-50	55-75	40-55	35-50
	30-60	Extremely gravelly loamy sand, extremely cobbly sandy loam, extremely gravelly sandy loam	GP-GM, GP, GM		0-20	25-50	20-45	10-30	5-25
	0-2	Moderately decomposed plant material	PT		0	0	100	100	60-10
	2-6	Ashy sandy loam	ML		0	0	90-100	85-95	75-90
255: Thetis-----	6-12	Gravelly ashly sandy loam	SM		0	0	60-80	55-75	35-50
	12-48	Very gravelly ashly sandy loam, very cobbly ashly sandy loam, extremely cobbly ashly sandy loam	GM, SM		0-5	10-60	45-65	40-60	25-35
	48-60	Very gravelly sandy loam, very cobbly sandy loam, extremely cobbly sandy loam	GM, SM		0-20	10-65	45-65	40-60	25-35

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
259: Fluvaquents----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-9	Ashy silt loam	CL-ML, CL	A-4		0	0	100	100
	9-18	Stratified ashly sandy loam to very gravelly ashy silt loam	SM, GC-GM, GM, SC-SM	A-2, A-1, A-4	0-5	0-25	55-100	45-85	30-70
	18-60	Very gravelly loamy sand, extremely cobbly sandy loam	GM, GC-GM, GP-GM	A-1	0-30	0-60	40-60	25-50	10-35
262: Roslyn, clay loam subsoil----	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-8	Ashy sandy loam	SM	A-4		0	0	95-100	90-100
	8-15	Ashy sandy loam	SM	A-4		0	0	95-100	90-100
	15-31	Loam, gravelly loam	SC-SM	A-4		0	0	70-95	60-90
	31-60	Gravelly clay loam, clay loam	ML, SM	A-6		0	0	75-95	70-85
263: Volperie-----	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-8	Very paragravelly ashly sandy loam	SM	A-4		0	0	100	85-90
	8-16	Very paragravelly loam, paragravelly sandy loam, gravelly sandy loam	SM	A-4, A-2		0	0	100	70-90
	16-38	Extremely paragravelly loam, gravelly sandy loam, very paragravelly sandy loam, gravelly loam	SM	A-4, A-2	0-10	0-10	75-100	60-90	40-60
	38-48	Weathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10	4	10	40
264: Volperie-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	60-10
	1-8	Very paragravelly ash sandy loam	SM			0	0	100	85-90
	8-16	Very paragravelly loam, paragravelly sandy loam, gravelly sandy loam	SM	A-4, A-2		0	0	100	70-90
	16-38	Extremely paragravelly loam, gravelly sandy loam, very paragravelly sandy loam, gravelly loam	SM	A-4, A-2	0-10	0-10	75-100	60-90	40-60
	38-48	Weathered bedrock			---	---	---	---	---
265: Volperie, warm--	0-1	Slightly decomposed plant material	PT			0	0	100	60-10
	1-8	Very paragravelly ash sandy loam	SM			0	0	100	85-90
	8-16	Very paragravelly loam, paragravelly sandy loam, gravelly sandy loam	SM	A-4, A-2		0	0	100	70-90
	16-38	Extremely paragravelly loam, gravelly sandy loam, very paragravelly sandy loam, gravelly loam	SM	A-4, A-2	0-10	0-10	75-100	60-90	40-60
	38-48	Weathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	
266: Volperie, north slopes-----	In				Pct	Pct				
	0-1	Slightly decomposed plant material	PT			0	0	100	100	60-10
	1-8	Very paragravelly ash sandy loam	SM			0	0	100	85-90	55-65
	8-16	Very paragravelly loam, paragravelly sandy loam, gravelly sandy loam	SM			0	0	100	70-90	40-55
	16-38	Extremely paragravelly loam, gravelly sandy loam, very paragravelly sandy loam, gravelly loam	SM			0-10	0-10	75-100	60-90	40-60
	38-48	Weathered bedrock			---	---	---	---	---	---
267: Esmeralda, moist	0-1	Slightly decomposed plant material	PT			0	0	100	100	60-10
	1-3	Very gravelly ash loam	GM			0	0	50-55	45-50	35-40
	3-10	Very cobbly ash sandy loam, cobbly ash sandy loam, cobbly ash loam	SM			0-10	25-35	75-90	70-80	50-60
	10-44	Very cobbly ash loam loam, extremely cobbly ashy sandy loam, very cobbly ash loam	GM, SM			0-10	30-60	50-70	40-60	25-45
	44-60	Extremely cobbly sandy loam, extremely gravelly sandy loam	GM			0-10	35-55	35-55	20-40	15-35
268: Vitricryands----	0-1	Moderately decomposed plant material	PT			0	0	100	100	60-10
	1-9	Very gravelly ash sandy loam	GM			0-5	0-25	45-60	35-50	25-45
	9-37	Extremely gravelly ash loam, extremely cobbly ashy loam, very gravelly ash sandy loam, gravelly ash loam	SM, GM			0-5	0-45	40-90	35-70	25-60
	37-47	Unweathered bedrock			---	---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
270: Roxer-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT			0	0	100	60-100
	1-8	Gravelly ashly sandy loam	SM			0	0-15	80-90	65-80
	8-33	Very gravelly loam, gravelly ashly loam	GM	A-4, A-2 A-2		0-5	5-30	50-65	40-60
	33-44	Very cobbly loam, very gravelly loam	GM	A-2, A-4		0-5	25-40	50-65	40-60
	44-60	Very cobbly loam, very gravelly loam	GM	A-2		0-15	25-40	50-65	40-60
Deroux-----	0-2	Slightly decomposed plant material	PT			0	0	100	60-100
	2-9	Cobbly ashly sandy loam	SM			0-5	25-40	90-100	60-100
	9-12	Very cobbly ashly sandy loam	SM	A-2, A-1 A-2		0-15	45-50	75-95	70-90
	12-25	Very stony sandy loam, very cobbly sandy loam	SM	A-2		10-50	15-45	85-95	80-90
	25-35	Unweathered bedrock				---	---	---	---
	0-60	Unweathered bedrock				---	---	---	---
271: Roxer-----	0-1	Moderately decomposed plant material	PT			0	0	100	60-100
	1-8	Gravelly ashly sandy loam	SM			0	0-15	80-90	65-80
	8-33	Very gravelly loam, gravelly ashly loam	GM	A-4, A-2 A-2		0-5	5-30	50-65	40-60
	33-44	Very cobbly loam, very gravelly loam	GM	A-2, A-4		0-5	25-40	50-65	40-60
	44-60	Very cobbly loam, very gravelly loam	GM	A-2		0-15	25-40	50-65	40-60
	0-2	Slightly decomposed plant material	PT			0	0	100	60-100
Deroux-----	2-9	Cobbly ashly sandy loam	SM			0-5	25-50	90-100	60-100
	9-12	Very cobbly ashly sandy loam	SM	A-2, A-1 A-2		0-15	45-50	75-95	70-90
	12-25	Very stony sandy loam, very cobbly sandy loam	SM	A-2		10-50	15-45	85-95	80-90
	25-35	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
272: Andic Dystroxerepts--	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT						
	1-14	Very cobbly ashly sandy loam	SM		0	0	100	100	60-100
	14-17	Extremely cobbly ashly loam, extremely cobbly ashly sandy loam	GM		0-10	15-45	70-80	40-60	30-45
	17-33	Extremely cobbly loam, extremely cobbly sandy loam	GM		0	45-75	30-55	25-45	20-40
	33-43	Unweathered bedrock			0	45-75	30-55	25-45	20-40
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---
280: Esmeralda-----	0-1	Slightly decomposed plant material	PT		0	0	100	100	60-100
	1-3	Very gravelly ashly loam	GM		0	0	50-55	45-50	35-40
	3-10	Very cobbly ashly sandy loam, cobbly ashly sandy loam, cobbly ashly loam	SM		0-10	25-35	75-90	70-80	50-60
	10-44	Very cobbly ashly sandy loam, extremely cobbly ashly sandy loam, very cobbly ashly loam	GM, SM		0-10	30-60	50-70	40-60	25-45
	44-60	Extremely cobbly sandy loam, extremely gravelly sandy loam	GM		0-10	35-55	35-55	20-40	15-35
281: Vanepps-----	0-1	Moderately decomposed plant material	PT		0	0	100	100	60-100
	1-9	Gravelly ashly sandy loam	SM		0-10	5-15	80-95	65-90	50-70
	9-29	Very cobbly loam, very cobbly sandy loam, extremely cobbly loam	SM, GM		0-15	30-50	55-80	50-75	35-65
	29-38	Weathered bedrock			---	---	---	---	---
	0-60	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
284: Esmeralda, bouldery surface-----	<i>In</i>					<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT	A-8		0	0	100	60-10
	1-3	Very gravelly ash loam	GM	A-2		0	0	50-55	45-50
	3-10	Very cobbly ash loam	SM	A-2, A-4		0-10	25-35	75-90	35-40
		Very cobbly ash sandy loam, cobbly ash sandy loam, cobbly ash loam							50-60
	10-44	Very cobbly ash sandy loam, extremely cobbly ash sandy loam, very cobbly ash loam	GM, SM	A-2, A-1		0-10	30-60	50-70	40-60
	44-60	Extremely cobbly sandy loam, extremely gravelly sandy loam	GM	A-1		0-10	35-55	35-55	20-40
290: Andic Dystrocrypepts--									15-35
	0-5	Very gravelly ash sandy loam	GM, SM	A-1, A-2		0	0-15	55-65	45-50
	5-11	Very gravelly ash sandy loam, very cobbly ash sandy loam	SM	A-2, A-1, A-4		0-5	15-40	60-80	45-55
	11-26	Extremely cobbly sandy loam, extremely cobbly loam, extremely gravelly sandy loam	GM	A-1, A-2		0-25	15-55	40-65	20-40
	26-36	Unweathered bedrock				---	---	---	---
	0-60	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
301: Vabus-----	0-4	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	4-7	Ashy sandy loam	SM	A-4	0	0	90-95	85-90	55-65
	7-13	Ashy sandy loam	SM	A-4	0	0	85-95	80-90	50-75
	13-18	Very gravelly ash sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM	A-1, A-2	0-5	0-30	40-55	30-50	20-40
	18-35	Very gravelly ash sandy loam, extremely gravelly ash sandy loam, extremely cobbly ashy sandy loam	GM	A-1	0-10	5-45	40-55	30-45	20-30
	35-60	Very gravelly loamy sand, very cobbly sandy loam, extremely gravelly loamy sand, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1	0-10	5-50	40-60	30-50	15-40
302: Vabus-----	0-4	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	4-7	Ashy sandy loam	SM	A-4	0	0	90-95	85-90	55-65
	7-13	Ashy sandy loam	SM	A-4	0	0	85-95	80-90	50-75
	13-18	Very gravelly ash sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM	A-1, A-2	0-5	0-30	40-55	30-50	20-40
	18-35	Very gravelly ash sandy loam, extremely gravelly ash sandy loam, extremely cobbly ashy sandy loam	GM	A-1	0-10	5-45	40-55	30-45	20-30
	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1	0-10	5-50	40-60	30-50	15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4	10	40
304: Madrak-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-10	Gravelly ashly loam	SM			0	0	75-90	60-75
	10-19	Very cobbly ashly sandy loam	SM	A-2, A-1	0-10	25-40	65-85	50-75	35-50
	19-30	Very cobbly ashly sandy loam, very cobbly ashly loamy sand, extremely cobbly ashly loamy sand	SM, GM	A-1	0-10	30-50	50-75	35-60	20-40
	30-39	Unweathered bedrock			---	---	---	---	---
306: Vabus-----	0-4	Moderately decomposed plant material	PT	A-8		0	0	100	100
	4-7	Stony ashly sandy loam	SM	A-4	5-10	5-10	90-100	85-90	65-75
	7-13	Ashly sandy loam	SM	A-4	0	0	85-95	80-90	50-75
	13-18	Very gravelly ashly sandy loam, very gravelly ashly loam, very cobbly ashly sandy loam	GM	A-1, A-2	0-5	0-30	40-55	30-50	20-40
	18-35	Very gravelly ashly sandy loam, extremely gravelly ashly sandy loam, extremely cobbly	GM	A-1	0-10	5-45	40-55	30-45	20-30
	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1	0-10	5-50	40-60	30-50	15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
308: Vabus-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Moderately decomposed plant material	PT			0	0	100	60-100
	4-7	Stony ashy sandy loam	SM			5-10	5-10	90-100	85-90
	7-13	Ashy sandy loam	SM			0	0	85-95	80-90
	13-18	Very gravelly ashy sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM GM	A-2		0-5	0-30	40-55	30-50
	18-35	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, extremely cobbly ashy sandy loam	GM GM	A-1		0-10	5-45	40-55	30-45
	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1		0-10	5-50	40-60	30-50
									15-40
309: Vabus-----	0-4	Moderately decomposed plant material	PT			0	0	100	60-100
	4-7	Ashy sandy loam	SM			0	0	90-95	85-90
	7-13	Ashy sandy loam	SM			0	0	85-95	80-90
	13-18	Very gravelly ashy sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM GM	A-1, A-2		0-5	0-30	40-55	30-50
	18-35	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, extremely cobbly ashy sandy loam	GM GM	A-1		0-10	5-45	40-55	30-45
	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1		0-10	5-50	40-60	30-50
									15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
313: Vabus-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Moderately decomposed plant material	PT			0	0	100	60-100
	4-7	Stony ashy sandy loam	SM			5-10	5-10	90-100	85-90
	7-13	Ashy sandy loam	SM			0	0	85-95	80-90
	13-18	Very gravelly ashy sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM			0-5	0-30	40-55	30-50
	18-35	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, extremely cobbly ashy sandy loam	GM			0-10	5-45	40-55	30-45
	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM			0-10	5-50	40-60	30-50
									15-40
315: Lemah-----	0-1	Moderately decomposed plant material	PT			0	0	100	60-100
	1-3	Very stony ashy sandy loam	SM, GM			20-40	25-45	50-80	45-75
	3-9	Very cobbly ashy sandy loam	GM, SM			0-15	35-50	50-75	40-65
	9-37	Extremely cobbly ashy sandy loam, very cobbly ashy sandy loam	GM			0-15	40-50	40-60	30-55
	37-60	Extremely cobbly ashy sandy loam	GM, GP-GM			0-15	40-65	30-50	20-45
									15-30
	0-60	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							4	10	40
316: Cryorthents-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Slightly decomposed plant material	PT						
	1-5	Gravelly ashly sandy loam	SM						
	5-21	Very gravelly ashly sandy loam, very cobbly ashly sandy loam, extremely cobbly ashly sandy loam	GM, GP-GM, SM, SP-SM	A-2, A-1, A-4 A-1	5-15 0-10	5-20 10-35	75-100 40-65	100 20-50	60-100 10-40
	21-27	Very cobbly sandy loam, very gravelly sandy loam, extremely cobbly loamy sand	GM, GP-GM, SM, SP-SM	A-1	0-15	25-50	40-65	20-50	10-40
	27-60	Extremely cobbly loamy sand, extremely cobbly sandy loam, extremely cobbly sand	GP-GM, GC-GM, GM, GP	A-1	5-30	45-60	25-55	15-45	10-30
317: Ronselet-----	0-1	Moderately decomposed plant material	PT						
	1-4	Ashy sandy loam	SM						
	4-9	Gravelly ashly sandy loam	SM						
	9-18	Very gravelly ashly sandy loam, very cobbly ashly sandy loam	SM, GM	A-2, A-1, A-4 A-1	0 0-15	0-5 10-40	60-85 55-70	50-75 45-60	35-60 30-40
	18-60	Very gravelly sandy loam, extremely cobbly sandy loam, very cobbly sandy loam	GM, SM	A-1	0-25	10-50	35-70	30-55	15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-		
			Unified	AASHTO	inches		3-10		4
318: Vabus-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Moderately decomposed plant material	PT				0	0	100
	4-7	Very stony ashy sandy loam	SM		15-25	0-15	70-95	65-90	45-65
	7-13	Ashy sandy loam	SM						
	13-18	Very gravelly ashy sandy loam, very gravelly	GM		0	0	85-95	80-90	50-75
		ashy loam, very cobbly			0-5	0-30	40-55	30-50	20-40
		ashy sandy loam							
	18-35	Very gravelly ashy sandy loam, extremely	GM		0-10	5-45	40-55	30-45	20-30
		gravelly ashy sandy loam, extremely cobbly							
		ashy sandy loam							
319: Vabus, south slopes-----	35-60	Very gravelly loamy sand, very cobbly sandy loam, extremely gravelly loamy sand, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1	0-10	5-50	40-60	30-50	15-40
	0-4	Moderately decomposed plant material	PT				0	0	100
	4-7	Very stony ashy sandy loam	SM		15-25	0-15	70-95	65-90	45-65
	7-13	Ashy sandy loam	SM						
	13-18	Very gravelly ashy sandy loam, very gravelly	GM		0	0	85-95	80-90	50-75
		ashy loam, very cobbly			0-5	0-30	40-55	30-50	20-40
		ashy sandy loam							
	18-35	Very gravelly ashy sandy loam, extremely	GM		0-10	5-45	40-55	30-45	20-30
		gravelly ashy sandy loam, extremely cobbly							
319: Vabus, south slopes-----	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1	0-10	5-50	40-60	30-50	15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
320 : Vabus-----	0-4	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	4-7	Very stony ashy sandy loam	SM	A-2, A-4	15-25	0-15	70-95	65-90	45-65
	7-13	Ashy sandy loam	SM	A-4	0	0	85-95	80-90	50-75
	13-18	Very gravelly ashy sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM	A-1, A-2	0-5	0-30	40-55	30-50	20-40
	18-35	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, extremely cobbly loam, extremely cobbly ashy sandy loam	GM	A-1	0-10	5-45	40-55	30-45	20-30
	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1	0-10	5-50	40-60	30-50	15-40
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---
321 : Andic Dystrocrypepts, avalanche chute	0-5	Stony ashy sandy loam	SM	A-4	10-25	0-15	75-100	65-90	45-70
	5-11	Very gravelly ashy sandy loam, very cobbly ashy sandy loam	SM	A-2, A-1, A-4	0-5	15-40	60-80	45-55	35-50
	11-60	Extremely cobbly sandy loam, extremely cobbly loam, extremely gravelly sandy loam	GM	A-1, A-2	0-25	15-55	40-65	20-40	15-35

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							4	10	40
321: Andic Haplocryods----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-2		PT		0	0	100	100	60-10
	2-4	Cobbly ashy sandy loam	SM		0-5	15-25	80-95	70-85	45-65
	4-14	Gravelly medial loam, very gravelly medial sandy loam, very cobbly medial loam	GM, ML		0-10	0-35	50-75	40-70	35-70
	14-24	Very cobbly medial loam, extremely gravelly medial sandy loam, extremely cobbly medial sandy loam	GM, SM		0-25	10-35	45-75	30-60	20-50
	24-60	Very cobbly loam, extremely gravelly sandy loam, extremely cobbly sandy loam	GM, SM		0-25	15-40	45-75	30-60	20-50
Rock outcrop-----	0-60	Unweathered bedrock			---	---	---	---	---
	0-4	Moderately decomposed plant material	PT		0	0	100	100	60-10
	4-7	Very stony ashy sandy loam	SM		15-25	0-15	70-95	65-90	45-65
	7-13	Ashy sandy loam	SM						
	13-18	Very gravelly ashy sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM		0	0	85-95	80-90	50-75
					0-5	0-30	40-55	30-50	20-40
	18-35	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, extremely cobbly ashy sandy loam	GM		0-10	5-45	40-55	30-45	20-30
322: Vabus-----	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM		0-10	5-50	40-60	30-50	15-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--	
			Unified	AASHTO	inches	Pct	4	
							10	40
323: Cryorthents, cool-----	In				Pct	Pct		
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100
	1-8 8-17	Cobbly ashy loam Extremely cobbly ashy loamy sand, extremely gravelly ashy loamy sand	SC-SM GW-GM, GM, SM, SP-SM	A-4 A-1	0-10 0-5	20-30 40-50	80-100 30-60	70-80 20-45
324: Ronsel-----	17-60	Extremely cobbly sand, extremely gravelly loamy sand, extremely cobbly loamy sand	GP-GM, GP, SP, SP-SM	A-1	0-10	40-60	30-60	20-45
	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100
	1-4 4-9 9-18	Gravelly ashy sandy loam Gravelly ashy sandy loam Very gravelly ashy sandy loam, very cobbly ashy sandy loam	SM SM SM, GM	A-2, A-4 A-2, A-1, A-4 A-1	0 0 0-15	75-85 60-85 10-40	65-75 50-75 55-70	50-55 35-60 45-60
328: Cryofluvents-----	18-60	Very gravelly sandy loam, extremely cobbly sandy loam, very cobbly sandy loam	GM, SM	A-1	0-25	10-50	35-70	30-55
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100
	1-7 7-13 13-60	Very cobbly ashy sandy loam Very cobbly ashy sandy loam, extremely cobbly ashy sandy loam Stratified extremely cobbly sand to gravelly sandy loam	SM GM, SM SM, GP-GM, GM, SP-SM	A-2, A-1 A-1 A-1, A-2, A-3	0-5 0-5 0-10	30-45 30-65 5-50	75-85 45-75 30-90	55-70 30-60 20-80

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-		
			Unified	AASHTO	inches	inches	4	10	40
328: Dystrocryepts----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-2	Moderately decomposed plant material	PT			0	0	100	100
	2-12	Ashy sandy loam	SM			0	0	90-100	75-100
	12-29	Very cobbly sandy loam, extremely cobbly sandy loam	GM			---	45-65	45-60	30-50
	29-60	Extremely cobbly sand, extremely cobbly loamy sand	GP-GM, GP, SP, SP-SM	A-1		---	45-65	45-60	30-50
332: Stirrup-----	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-4	Ashy sandy loam	SM			0	0	90-100	80-100
	4-8	Gravelly medial sandy loam, medial loam, gravelly medial loam	SM, ML GM	A-4, A-2 A-2, A-1		0	0-15	70-95	60-90
	8-24	Very gravelly medial loam, very gravelly medial sandy loam, very cobbly medial sandy loam	GM			0	0-50	45-60	35-55
	24-36	Extremely gravelly medial sandy loam, extremely cobbly medial sandy loam, very gravelly medial sandy loam	GP-GM, GM	A-1		0-15	0-55	20-45	15-35
	36-43	Extremely gravelly sandy loam, extremely cobbly sandy clay loam	GP-GC, GM	A-2		0-5	30-70	10-55	5-45
	43-53	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
333: Stirrup-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-4	Ashy sandy loam	SM			0	0	90-100	80-100
	4-8	Gravelly medial sandy loam, medial loam, gravelly medial loam	SM, ML	A-2 A-4, A-2		0	0-15	70-95	60-90
	8-24	Very gravelly medial loam, very gravelly medial sandy loam, very cobblely medial sandy loam	GM	A-2, A-1		0	0-50	45-60	35-55
	24-36	Extremely gravelly medial sandy loam, extremely cobblely medial sandy loam, very gravelly medial sandy loam	GP-GM, GM	A-1		0-15	0-55	20-45	15-35
	36-43	Extremely gravelly sandy loam, extremely cobblely sandy clay loam	GP-GC, GM	A-2		0-5	30-70	10-55	5-45
	43-53	Unweathered bedrock			---	---	---	---	---
	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-4	Ashy sandy loam	SM			0	0	90-100	80-100
	4-8	Gravelly medial sandy loam, medial loam, gravelly medial loam	SM, ML	A-2 A-4, A-2		0	0-15	70-95	60-90
	8-24	Very gravelly medial loam, very gravelly medial sandy loam, very cobblely medial sandy loam	GM	A-2, A-1		0	0-50	45-60	35-55
	24-36	Extremely gravelly medial sandy loam, extremely cobblely medial sandy loam, very gravelly medial sandy loam	GP-GM, GM	A-1		0-15	0-55	20-45	15-35
334: Stirrup-----	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-4	Ashy sandy loam	SM			0	0	90-100	80-100
	4-8	Gravelly medial sandy loam, medial loam, gravelly medial loam	SM, ML	A-2 A-4, A-2		0	0-15	70-95	60-90
	8-24	Very gravelly medial loam, very gravelly medial sandy loam, very cobblely medial sandy loam	GM	A-2, A-1		0	0-50	45-60	35-55
	24-36	Extremely gravelly medial sandy loam, extremely cobblely medial sandy loam, very gravelly medial sandy loam	GP-GM, GM	A-1		0-15	0-55	20-45	15-35
	36-43	Extremely gravelly sandy loam, extremely cobblely sandy clay loam	GP-GC, GM	A-2		0-5	30-70	10-55	5-45
	43-53	Unweathered bedrock			---	---	---	---	---
	0-1	Moderately decomposed plant material	PT			0	0	100	100
	1-4	Ashy sandy loam	SM			0	0	90-100	80-100
	4-8	Gravelly medial sandy loam, medial loam, gravelly medial loam	SM, ML	A-2 A-4, A-2		0	0-15	70-95	60-90
	8-24	Very gravelly medial loam, very gravelly medial sandy loam, very cobblely medial sandy loam	GM	A-2, A-1		0	0-50	45-60	35-55
	24-36	Extremely gravelly medial sandy loam, extremely cobblely medial sandy loam, very gravelly medial sandy loam	GP-GM, GM	A-1		0-15	0-55	20-45	15-35
	36-43	Extremely gravelly sandy loam, extremely cobblely sandy clay loam	GP-GC, GM	A-2		0-5	30-70	10-55	5-45
	43-53	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
335: Vabus-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Moderately decomposed plant material	PT			0	0	100	60-100
	4-7	Stony ashy sandy loam	SM			5-10	5-10	90-100	85-90
	7-13	Ashy sandy loam	SM			0	0	85-95	80-90
	13-18	Very gravelly ashy sandy loam, very gravelly ashy loam, very cobbly ashy sandy loam	GM GM	A-1, A-2		0-5	0-30	40-55	30-50
	18-35	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, extremely cobbly ashy sandy loam	GM	A-1		0-10	5-45	40-55	30-45
	35-60	Very gravelly loamy sand, extremely gravelly loamy sand, very cobbly sandy loam, extremely cobbly loamy sand, extremely gravelly sandy loam	GM, GC-GM	A-1		0-10	5-50	40-60	30-50
	0-60	Unweathered bedrock			---	---	---	---	---
	0-1	Moderately decomposed plant material	PT			0	0	100	60-100
	1-4	Stony ashy sandy loam	SM			10-25	10-20	90-100	80-90
336: Ronsel-----	4-9	Gravelly ashy sandy loam	SM			0	0-5	60-85	50-75
	9-18	Very gravelly ashy sandy loam, very cobbly ashy sandy loam	SM, GM	A-1		0-15	10-40	55-70	45-60
	18-60	Very gravelly sandy loam, extremely cobbly sandy loam, very cobbly sandy loam	GM, SM	A-1		0-25	10-50	35-70	30-55

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-					
			Unified	AASHTO	inches	>10	3-10		4	10	40	
							Pct	Pct				
338: Gilpar-----	In					Pct	Pct					
	0-2	Moderately decomposed plant material	PT				0	0	100	100	100	60-10
	2-3	Ashy sandy loam	SM				0	0	90-100	85-100	50-65	
	3-9	Ashy sandy loam	SM				0	0	90-100	85-100	50-65	
	9-21	Gravelly ashy loam, gravelly ashy sandy loam, very gravelly ashy sandy loam	GM, SM				0-10	0-15	50-70	40-65	25-45	
	21-35	Very cobbly ashy loam, very channery ashy sandy loam, very gravelly ashy loam	GM, SM				0-10	5-55	45-70	40-60	25-45	
	35-60	Very cobbly ashy loam, extremely gravelly ashy sandy loam, very channery ashy sandy loam	GM				0-10	5-55	40-60	30-55	20-40	
346: Gilpar-----	0-2	Moderately decomposed plant material	PT				0	0	100	100	100	60-10
	2-3	Ashy sandy loam	SM				0	0	90-100	85-100	50-65	
	3-9	Ashy sandy loam	SM				0	0	90-100	85-100	50-65	
	9-21	Gravelly ashy loam, gravelly ashy sandy loam, very gravelly ashy sandy loam	GM, SM				0-10	0-15	50-70	40-65	25-45	
	21-35	Very cobbly ashy loam, very channery ashy sandy loam, very gravelly ashy loam	GM, SM				0-10	5-55	45-70	40-60	25-45	
	35-60	Very cobbly ashy loam, extremely gravelly ashy sandy loam, very channery ashy sandy loam	GM				0-10	5-55	40-60	30-55	20-40	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	 3-10			
							4	10	40
347: Gilpar-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-10
	2-3	Ashy sandy loam	SM	A-4	0	0	90-100	85-100	50-65
	3-9	Ashy sandy loam	SM	A-4	0	0	90-100	85-100	50-65
	9-21	Gravelly ashy loam, gravelly ashy sandy loam, very gravelly ashy sandy loam	GM, SM	A-2, A-1	0-10	0-15	50-70	40-65	25-45
	21-35	Very cobbly ashy loam, very channery ashy sandy loam, very gravelly ashy loam	GM, SM	A-2, A-1	0-10	5-55	45-70	40-60	25-45
	35-60	Very cobbly ashy loam, extremely gravelly ashy sandy loam, very channery ashy sandy loam	GM	A-1, A-2	0-10	5-55	40-60	30-55	20-40
402: Esmeralda, bouldery surface-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-3	Very gravelly ashy loam	GM	A-2	0	0	50-55	45-50	35-40
	3-10	Very cobbly ashy sandy loam, cobbly ashy sandy loam, cobbly ashy loam	SM	A-2, A-4	0-10	25-35	75-90	70-80	50-60
	10-44	Very cobbly ashy sandy loam, extremely cobbly ashy sandy loam, very cobbly ashy loam	GM, SM	A-2, A-1	0-10	30-60	50-70	40-60	25-45
	44-60	Extremely cobbly sandy loam, extremely gravelly sandy loam	GM	A-1	0-10	35-55	35-55	20-40	15-35
	0-60	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
404: Polallie-----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-2	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-5	170-80	60-75	40-50
	2-3	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-10	170-80	60-75	40-50
	3-14	Very gravelly ashy sandy loam, gravelly ashy sandy loam	GM, SM	A-2, A-1	0	0-10	150-75	45-70	35-45
	14-26	Very gravelly ashy loam, very gravelly ashy sandy loam, very cobbly ashy sandy loam	GM, SM	A-2, A-1	0	15-35	45-70	40-55	30-45
	26-38	Extremely gravelly ashy sandy loam, very gravelly ashy sandy loam, very cobbly ashy sandy loam	GM, GP-GM, SM, SP-SM	A-1	0-10	15-45	135-70	15-55	10-45
	38-47	Unweathered bedrock			---	---	---	---	---
	0-60	Unweathered bedrock			---	---	---	---	---
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
405: Polallie-----	1-2	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-5	170-80	60-75	40-50
	2-3	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-10	170-80	60-75	40-50
	3-14	Very gravelly ashy sandy loam, gravelly ashy sandy loam	GM, SM	A-2, A-1	0	0-10	150-75	45-70	35-45
	14-26	Very gravelly ashy loam, very gravelly ashy sandy loam, very cobbly ashy sandy loam	GM, SM	A-2, A-1	0	15-35	45-70	40-55	30-45
	26-38	Extremely gravelly ashy sandy loam, very gravelly ashy sandy loam, very cobbly ashy sandy loam	GM, GP-GM, SM, SP-SM	A-1	0-10	15-45	135-70	15-55	10-45
	38-47	Unweathered bedrock			---	---	---	---	---
	0-60	Unweathered bedrock			---	---	---	---	---
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-2	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-5	170-80	60-75	40-50
	2-3	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-10	170-80	60-75	40-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches			
							4	10	40
406: Polallie-----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	60-10
	1-2	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-5	70-80	60-75	40-50
	2-3	Gravelly ashy sandy loam	SM	A-2, A-1	0	0-10	70-80	60-75	40-50
	3-14	Very gravelly ashy sandy loam, gravelly ashy sandy loam	GM, SM	A-2, A-1	0	0-10	50-75	45-70	35-45
	14-26	Very gravelly ashy loam, very gravelly ashy sandy loam, very cobbly ashy sandy loam	GM, SM	A-2, A-1	0	15-35	45-70	40-55	30-45
	26-38	Extremely gravelly ashy sandy loam, very gravelly ashy sandy loam, very cobbly ashy sandy loam	GM, GP-GM, SM, SP-SM	A-1	0-10	15-45	35-70	15-55	10-45
	38-47	Unweathered bedrock			---	---	---	---	---
	0-60	Unweathered bedrock			---	---	---	---	---
	408: Rock outcrop----- Domerie-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100
1-4		Gravelly ashy sandy loam	SM	A-2, A-1	0-10	5-10	60-75	50-65	30-45
4-9		Channery ashy sandy loam, very channery ashy sandy loam, channery ashy loam	SM	A-2, A-1	0-10	5-20	60-75	50-65	30-45
9-34		Very channery ashy sandy loam, very flaggy ashy loam	GM	A-1, A-2	0-10	25-45	35-55	30-50	15-40
34-41		Extremely channery ashy sandy loam, very flaggy ashy loam	GM, GP-GM	A-1, A-2	0-15	25-45	25-50	15-50	10-45
41-56		Extremely channery sandy loam, very channery loam	GM, GC-GM, GP-GM	A-1, A-2	0-15	25-45	25-50	15-50	10-45
56-60		Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches			
							4	10	40
409: Domerie, warm----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT			0	0	100	100
	1-4	Gravelly ashly sandy loam	SM		0-10	5-10	60-75	50-65	30-45
	4-9	Channery ashly sandy loam, very channery	SM		0-10	5-20	60-75	50-65	30-45
		ashly sandy loam, channery ashly loam							
	9-34	Very channery ashly sandy loam, very flaggy ashly loam	GM		0-10	25-45	35-55	30-50	15-40
	34-41	Extremely channery ashly sandy loam, very flaggy ashly loam	GM, GP-GM		0-15	25-45	25-50	15-50	10-45
	41-56	Extremely channery sandy loam, very channery loam	GM, GC-GM, GP-GM		0-15	25-45	25-50	15-50	10-45
	56-60	Unweathered bedrock			---	---	---	---	---
410: Tanaha-----	0-7	Ashy loam	CL			0	0	100	95-100
	7-12	Ashy loam, ashly silt loam	CL			0	0	100	95-100
	12-32	Clay loam, silty clay loam	CL			0	0	100	95-100
	32-38	Cemented material			---	---	---	---	---
	38-60	Loam, clay loam, silty clay loam	CL		0	0	100	90-100	85-100
411: Argabak-----	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM						
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC		0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---
414: Argabak-----	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM		0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC		0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Fragments >10	inches		
							4	10	40
415: Benwy-----	In				Pct	Pct			
	0-10	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	80-90
	10-18	Silt loam, loam	ML	A-4	0	0	90-100	85-100	75-90
	18-33	Gravelly silt loam, gravelly loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-95	60-85
	33-45	Gravelly silt loam, loam, gravelly clay loam	CL, CL-ML	A-4, A-6	0	0-10	70-95	65-90	55-80
417: Benwy-----	45-55	Cemented material			---	---	---	---	---
	0-10	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	80-90
	10-18	Silt loam, loam	ML	A-4	0	0	90-100	85-100	75-90
	18-33	Gravelly silt loam, gravelly loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-95	60-85
	33-45	Gravelly silt loam, loam, gravelly clay loam	CL, CL-ML	A-4, A-6	0	0-10	70-95	65-90	55-80
422: Clerf-----	45-55	Cemented material			---	---	---	---	---
	0-9	Very cobbly clay loam	GC	A-6	0-10	30-45	60-80	50-70	40-65
	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2	0-5	10-40	50-75	40-65	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-10	20-45	35-70	25-60	20-50
	24-34	Unweathered bedrock			---	---	---	---	---
424: Clenan-----	0-14	Very fine sandy loam	ML, SM, SC- SM, CL-ML	A-4	0	0	95-100	90-100	80-95
	14-42	Stratified loamy fine sand to silt loam	ML, SM, CL- ML, SC-SM	A-4	0	0	95-100	90-100	70-85
	42-60	Stratified sand to silt loam	SM, ML, CL- ML, SC-SM	A-4, A-2	0	0-10	90-100	75-100	50-70

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
427: Clerf-----	In				Pct	Pct			
	0-9	Very cobbly clay loam	GC		0-10	30-45	60-80	150-70	40-65
	9-12	Very cobbly clay, very gravelly clay	GC	A-6 A-7, A-2	0-5	10-40	50-75	40-65	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-10	20-45	35-70	25-60	20-50
	24-34	Unweathered bedrock			---	---	---	---	---
429: Grinrod-----	0-4	Very cobbly loam	GC-GM, GC	A-2, A-4	0-10	30-45	45-70	35-60	25-55
	4-10	Very gravelly loam, very cobbly loam	GC-GM, GC	A-2, A-4	0-5	5-30	50-65	40-55	30-45
	10-27	Very gravelly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2	0-10	10-55	30-60	25-55	15-45
	27-37	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GM, GC-GM, ML	A-4	0-10	25-45	50-75	45-70	40-65
Horseflat-----	4-9	Very gravelly loam, very gravelly clay loam, very cobbly loam	GM, GC-GM	A-4, A-2	0-10	10-30	50-70	40-60	35-55
	9-16	Extremely gravelly loam, extremely cobbly loam, very cobbly clay loam	GC, GM	A-2	0-10	10-50	30-60	20-55	15-45
	16-26	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC-GM, GC	A-2, A-4	0-10	30-45	45-70	35-60	25-55
	4-10	Very gravelly loam	GC-GM, GC	A-2, A-4	0-5	5-30	50-65	40-55	30-45
431: Grinrod-----	10-27	Very gravelly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2	0-10	10-55	30-60	25-55	15-45
	27-37	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GM, GC-GM, ML	A-4	0-10	25-45	50-75	45-70	40-65
	4-9	Very gravelly loam, very gravelly clay loam, very cobbly loam	GM, GC-GM	A-4, A-2	0-10	10-30	50-70	40-60	35-55
	9-16	Extremely gravelly loam, extremely cobbly loam, very cobbly clay loam	GC, GM	A-2	0-10	10-50	30-60	20-55	15-45
Horseflat-----	16-26	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC-GM, GC	A-2, A-4	0-10	30-45	45-70	35-60	25-55
	4-10	Very gravelly loam	GC-GM, GC	A-2, A-4	0-5	5-30	50-65	40-55	30-45
	10-27	Very gravelly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2	0-10	10-55	30-60	25-55	15-45
	27-37	Unweathered bedrock			---	---	---	---	---
Horseflat-----	0-4	Very cobbly loam	GM, GC-GM, ML	A-4	0-10	25-45	50-75	45-70	40-65
	4-9	Very gravelly loam, very gravelly clay loam, very cobbly loam	GM, GC-GM	A-4, A-2	0-10	10-30	50-70	40-60	35-55
	9-16	Extremely gravelly loam, extremely cobbly loam, very cobbly clay loam	GC, GM	A-2	0-10	10-50	30-60	20-55	15-45
	16-26	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC-GM, GC	A-2, A-4	0-10	30-45	45-70	35-60	25-55

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
431: Rubble land----- 433: Kiona-----	In				Pct	Pct			
	0-60	Fragmental material			---	---	---	---	---
	0-4	Very stony loam	GM	A-4, A-2	25-30	15-30	55-75	45-65	35-50
	4-21	Very gravelly loam, cobbly silt loam, very cobbly loam	ML, GM, SM	A-4	0-10	15-30	60-90	45-80	45-75
Rubble land----- 434: Laufer-----	21-60	Extremely gravelly loam, extremely cobbly loam, very cobbly silt loam	GM	A-1, A-4	0-10	15-40	30-60	20-50	15-45
	0-60	Fragmental material			---	---	---	---	---
	0-3	Very cobbly loam	GC	A-6, A-2	0-10	25-45	60-75	50-65	45-60
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50
Thiessen-----	7-10	Very cobbly clay loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	10-35	50-65	40-60	30-50
	10-15	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay	GC	A-2	0-10	20-50	35-55	25-50	20-40
	15-25	Unweathered bedrock			---	---	---	---	---
	0-3	Very cobbly loam	GC	A-6, A-2	5-15	25-35	50-65	45-60	40-55
	3-9	Very gravelly clay loam, very cobbly clay loam, very gravelly clay	GC	A-6, A-2	0-10	5-45	50-65	45-60	35-50
	9-22	Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay	GC	A-2	0-10	25-65	25-55	15-50	10-40
	22-32	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
438: Blint-----	In					Pct			
	0-4	Very cobbly ashly loam	ML, CL-ML	A-4	0-5	15-25	70-90	60-80	50-75
	4-10	Very gravelly ashly loam, very gravelly ashly silt loam	GM, GC-GM	A-2	0-10	5-25	45-55	35-50	25-45
	10-18	Very gravelly loam, very gravelly silt loam	GC	A-2	0-10	5-35	45-55	35-50	25-45
	18-22	Extremely cobbly silt loam, extremely gravelly loam, very cobbly clay loam	GC	A-2, A-6	0-10	15-60	35-60	25-50	20-45
440: Nitzel-----	22-32	Unweathered bedrock			0	0	---	---	---
	0-8	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	8-29	Ashy loam, ashly silt loam	CL	A-6	0	0	100	95-100	85-100
	29-46	Loam, silt loam, clay loam	CL	A-6	0	0	100	95-100	85-100
	46-60	Sandy loam	CL-ML, CL	A-4	0	0	100	95-100	65-85
450: Argixerolls, south slopes----	0-5	Cobbly clay loam	CL	A-6, A-7	0-10	10-25	80-100	75-90	60-75
	5-37	Silty clay loam, clay loam	ML	A-7, A-6	0	0-5	85-95	75-90	65-85
	37-60	Gravelly clay loam, clay, very gravelly clay loam	GC, CL, SC	A-7, A-2	0-10	0-30	50-90	40-80	30-70
	0-9	Very gravelly loam	GC, SC	A-2, A-6	0-5	0-25	55-70	45-60	35-50
	9-12	Very gravelly loam, gravelly clay loam, very cobbly clay loam	GC, GM, SC, SM	A-2, A-6, A-7	0-5	0-25	55-75	45-65	35-55
Durixerolls, south slopes----	12-21	Extremely gravelly loam, very cobbly loam, very gravelly clay loam	GC, GM	A-2	0-10	10-40	40-65	30-55	20-45
	21-31	Cemented material			---	---	---	---	---
	31-60	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
452: Argabak-----	In				Pct	Pct			
	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---
	0-7	Silt loam	CL-ML, CL	A-4	0	0	95-100	90-100	80-100
Zen-----	7-12	Silt loam	CL-ML	A-4	0	0	95-100	90-100	80-100
	12-27	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100
	27-30	Gravelly clay loam, loam, silt loam, gravelly loam	SC, CL, SC-SM	A-4, A-6	0	0-10	70-100	65-95	55-65
	30-40	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC-GM, GC	A-2, A-4	0-10	30-45	45-70	35-60	25-55
Grinrod-----	4-10	Very gravelly loam	GC-GM, GC	A-2, A-4	0-5	5-30	50-65	40-55	30-45
	10-27	Very gravelly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2	0-10	10-55	30-60	25-55	15-45
	27-37	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC-GM, GC, SC-SM	A-4	0-10	30-45	60-75	55-70	40-55
	4-16	Very cobbly loam, very gravelly silt loam	GC-GM, GC	A-2, A-4	0-10	20-35	50-70	45-60	35-55
456: Cheviot-----	16-44	Very cobbly loam, extremely cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4	0-10	25-45	40-70	30-60	20-50
	44-49	Extremely cobbly loam, very cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4	0-10	25-45	40-70	30-60	20-50
	49-60	Extremely cobbly loam, very cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4	0-10	25-55	40-70	30-60	20-50
	0-60	Fragmental material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							>10	4	10
457: Cheviot-----	In				Pct	Pct			
	0-4	Very cobbly loam	GC-GM, GC, SC-SM	A-4		0-10	30-45	60-75	55-70
	4-16	Very cobbly loam, very gravelly loam, very gravelly silt loam	GC-GM, GC	A-2, A-4		0-10	20-35	50-70	45-60
	16-44	Very cobbly loam, extremely cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4		0-10	25-45	40-70	30-60
	44-49	Extremely cobbly loam, very cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4		0-10	25-45	40-70	30-60
	49-60	Extremely cobbly loam, very cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4		0-10	25-55	40-70	30-60
458: Clerf-----	0-9	Very cobbly clay loam	GC	A-6		0-10	30-45	60-80	50-70
	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2		0-5	10-40	50-75	40-65
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7		0-10	20-45	35-70	25-60
	24-34	Unweathered bedrock				---	---	---	---
Vantage-----	0-5	Very cobbly loam	GC, SC	A-6		0-10	25-45	60-75	50-65
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6		0-10	15-40	60-75	50-65
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7		0-15	25-50	35-60	25-55
	18-28	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							>10	4	10
458: Cheviot-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Very cobbly loam	GC-GM, GC, SC-SM	A-4		0-10	30-45	60-75	55-70
	4-16	Very cobbly loam, very gravelly loam, very gravelly silt loam	GC-GM, GC	A-2, A-4		0-10	20-35	50-70	45-60
	16-44	Very cobbly loam, extremely cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4		0-10	25-45	40-70	30-60
	44-49	Extremely cobbly loam, very cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4		0-10	25-45	40-70	30-60
	49-60	Extremely cobbly loam, very cobbly loam, extremely gravelly loam	GC-GM, GC	A-2, A-4		0-10	25-55	40-70	30-60
460: Neviot-----	0-6	Gravelly ashly loam	CL-ML, GC-GM, ML, SM	A-4		5-10	5-25	60-95	55-85
	6-12	Gravelly ashly loam	CL-ML, ML, SM, SC-SM	A-4, A-2		0-5	0-10	55-95	50-85
	12-22	Very gravelly loam, very cobbly loam	GC, GC-GM	A-4, A-2, A-6		0-10	10-35	40-70	35-60
	22-40	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4, A-6		0-10	10-35	40-70	35-60
	40-49	Very gravelly loam, very cobbly loam, extremely gravelly loam, extremely cobbly loam	GC, GC-GM	A-2, A-4, A-6		0-15	10-45	35-70	30-60
	49-60	Very gravelly loam, extremely gravelly loam, extremely cobbly loam	GC-GM, GC	A-2		0-15	10-50	35-60	30-50
	0-9	Gravelly ashly loam	ML, CL-ML	A-4		0	5-10	80-90	70-85
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	ML, GC	A-7, A-2		0-5	10-40	50-70	40-60
	27-35	Extremely gravelly clay, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7		0-10	20-45	35-60	25-55
Palerf-----	35-45	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
460: Vantage	In				Pct	Pct			
	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---
461: Kiona	0-4	Very stony loam	GM	A-4, A-2	25-30	15-30	55-75	45-65	35-50
	4-21	Very gravelly loam, cobbly silt loam, very cobbly loam	ML, GM, SM	A-4	0-10	15-30	60-90	45-80	45-75
	21-60	Extremely gravelly loam, extremely cobbly loam, very cobbly silt loam	GM	A-1, A-4	0-10	15-40	30-60	20-50	15-45
	0-4	Very cobbly loam	GM, GC-GM, ML	A-4	0-10	25-45	50-75	45-70	40-65
	4-9	Very gravelly loam, very gravelly clay loam, very cobbly loam	GM, GC-GM	A-4, A-2	0-10	10-30	50-70	40-60	35-55
465: Horseflat	9-16	Extremely gravelly loam, extremely cobbly loam, very cobbly clay loam	GC, GM	A-2	0-10	10-50	30-60	20-55	15-45
	16-26	Unweathered bedrock			---	---	---	---	---
	0-10	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	80-90
	10-18	Silt loam, loam	ML	A-4	0	0	90-100	85-100	75-90
	18-33	Gravelly silt loam, gravelly loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-95	60-85
466: Benwy	33-45	Gravelly silt loam, loam, gravelly clay loam	CL, CL-ML	A-4, A-6	0	0-10	70-95	65-90	55-80
	45-55	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

[illegible]

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
481: Nanum-----	In				Pct	Pct			
	0-8	Ashy loam	CL	A-6	0	0	100	95-100	90-100
	8-15	Ashy loam, ashly clay loam	CL	A-6	0	0	100	95-100	90-100
	15-28	Ashy clay loam	CL, SC	A-6	0	0-5	90-100	80-100	65-95
	28-35	Very gravelly clay loam, GC	GC	A-2	0-10	0-15	45-60	35-50	25-40
		very gravelly sandy clay loam							
482: Rollinger-----	35-60	Extremely gravelly sandy clay loam, very gravelly sandy clay loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-15	25-55	15-45	5-35
485: Rollinger-----	0-6	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	6-11	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	11-32	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100
	32-41	Silt loam	CL-ML, CL	A-4	0	0	100	100	95-100
	41-54	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	75-100	70-100
	54-60	Silt loam, gravelly sandy loam, sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	70-100	60-100	45-100
485: Rollinger-----	0-6	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	6-11	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	11-32	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100
	32-41	Silt loam	CL-ML, CL	A-4	0	0	100	100	95-100
	41-54	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	75-100	70-100
	54-60	Silt loam, gravelly sandy loam, sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	70-100	60-100	45-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
487: Rollinger-----	In				Pct	Pct			
	0-6	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	6-11	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	11-32	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100
	32-41	Silt loam	CL-ML, CL	A-4	0	0	100	100	95-100
	41-54	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	75-100	70-100
	54-60	Silt loam, gravelly sandy loam, sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	70-100	60-100	45-100
489: Rollinger-----	0-6	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	6-11	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	11-32	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100
	32-41	Silt loam	CL-ML, CL	A-4	0	0	100	100	95-100
	41-54	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	75-100	70-100
	54-60	Silt loam, gravelly sandy loam, sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	70-100	60-100	45-100
492: Rollinger-----	0-6	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	6-11	Ashy silt loam	ML	A-4	0	0	100	100	95-100
	11-32	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100
	32-41	Silt loam	CL-ML, CL	A-4	0	0	100	100	95-100
	41-54	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	75-100	70-100
	54-60	Silt loam, gravelly sandy loam, sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	70-100	60-100	45-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	
493: Rollinger-----	In				Pct	Pct				
	0-6	Ashy silt loam	ML	A-4	0	0	100	100	95-10	
	6-11	Ashy silt loam	ML	A-4	0	0	100	100	95-10	
	11-32	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-10	
	32-41	Silt loam	CL-ML, CL	A-4	0	0	100	100	95-10	
	41-54	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	75-100	70-10	
	54-60	Silt loam, gravelly sandy loam, sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	70-100	60-100	45-10	
494: Caliralls-----	0-5	Silt loam	CL-ML, CL	A-4	0-5	0-5	90-100	80-95	65-85	
	5-12	Silt loam, loam	CL-ML, CL	A-4	0-5	0-5	90-100	80-95	65-85	
	12-31	Gravelly loam, gravelly clay loam, silt loam	CL	A-6	0-5	0-15	75-100	65-90	60-80	
	31-52	Gravelly silt loam, gravelly clay loam	SC	A-6	0-5	5-20	70-80	60-70	45-60	
	52-60	Very gravelly loam, very gravelly clay loam, gravelly clay loam	GC	A-2	0-5	0-25	40-65	35-60	25-45	
495: Caliralls-----	0-5	Silt loam	CL-ML, CL	A-4	0-5	0-5	90-100	80-95	65-85	
	5-12	Silt loam, loam	CL-ML, CL	A-4	0-5	0-5	90-100	80-95	65-85	
	12-31	Gravelly loam, gravelly clay loam, silt loam	CL	A-6	0-5	0-15	75-100	65-90	60-80	
	31-52	Gravelly silt loam, gravelly clay loam	SC	A-6	0-5	5-20	70-80	60-70	45-60	
	52-60	Very gravelly loam, very gravelly clay loam, gravelly clay loam	GC	A-2	0-5	0-25	40-65	35-60	25-45	
Clerf-----	0-9	Very cobbly clay loam	GC	A-6	0-10	30-45	60-80	50-70	40-65	
	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2	0-5	10-40	50-75	40-65	30-60	
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-10	20-45	35-70	25-60	20-50	
	24-34	Unweathered bedrock			---	---	---	---	---	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
497: Camaspatch-----	In				Pct	Pct			
	0-4	Very cobbly loam							
	4-9	Very gravelly clay loam, GC	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65
		very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50
	9-15	Extremely cobbly clay, GC	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
498: Caliralls-----		very cobbly clay, extremely gravelly clay							
	15-25	Unweathered bedrock			---	---	---	---	---
	0-5	Silt loam	CL-ML, CL	A-4					
	5-12	Silt loam, loam	CL-ML, CL	A-4	0-5	0-5	90-100	80-95	65-85
Clerf-----	12-31	Gravelly loam, gravelly clay loam, silt loam	CL	A-6	0-5	0-5	90-100	80-95	65-85
	31-52	Gravelly silt loam, gravelly clay loam	SC	A-6	0-5	5-20	70-80	60-70	45-60
	52-60	Very gravelly loam, very gravelly clay loam, gravelly clay loam	GC	A-2	0-5	0-25	40-65	35-60	25-45
	0-9	Very cobbly clay loam	GC	A-6	0-10	30-45	60-80	50-70	40-65
500: Vantage-----	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2	0-5	10-40	50-75	40-65	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-10	20-45	35-70	25-60	20-50
	24-34	Unweathered bedrock			---	---	---	---	---
	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified		AASHTO		>10 inches		3-10 inches	
									4	10
502: Vantage	In						Pct	Pct		
	0-5	Very cobbly loam	GC, SC				0-10	25-45	60-75	50-65
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6			0-10	15-40	60-75	50-65
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7			0-15	25-50	35-60	25-55
	18-28	Unweathered bedrock					---	---	---	---
503: Terlan	0-7	Gravelly loam	CL-ML, CL, SC, SC-SM	A-4			0	0-10	75-85	70-80
	7-15	Gravelly clay loam, gravelly loam	CL, GC, SC	A-6			0	0-15	70-85	65-80
	15-18	Very gravelly loam, gravelly loam, gravelly clay loam	GC, CL, SC	A-6			0	0-25	60-80	50-75
	18-26	Cemented material					---	---	---	---
	26-60	Cemented material					---	---	---	---
Durtash	0-5	Gravelly loam	CL, GC, SC	A-4, A-6			0	0-10	65-85	60-75
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2			0-10	10-40	30-60	25-50
	14-19	Extremely gravelly clay	GC	A-2			0-10	5-40	30-70	25-60
	19-29	Cemented material					---	---	---	---
	29-60	Cemented material					---	---	---	---
Selah	0-9	Loam	CL-ML, CL	A-4			0	0	95-100	85-100
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6			0	0-5	95-100	85-100
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6			0	0-20	65-95	55-90
	21-31	Cemented material					---	---	---	---
	31-60	Cemented material					---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
509: Vantage-----	<i>In</i>					<i>Pct</i>			
	0-5	Very cobbly loam	GC, SC			0-10	25-45	60-75	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6 A-6		0-10	15-40	60-75	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC						
	18-28	Unweathered bedrock				---	---	---	---
Clerf-----	0-9	Very cobbly clay loam	GC			0-10	30-45	60-80	40-65
	9-12	Very cobbly clay, very gravelly clay	GC	A-6 A-7, A-2		0-5	10-40	50-75	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC			0-10	20-45	35-70	20-50
	24-34	Unweathered bedrock				---	---	---	---
511: Vantage-----	0-5	Very cobbly loam	GC, SC			0-10	25-45	60-75	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6 A-6		0-10	15-40	60-75	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC			0-15	25-50	35-60	20-50
	18-28	Unweathered bedrock				---	---	---	---
Clerf-----	0-9	Very cobbly clay loam	GC			0-10	30-45	60-80	40-65
	9-12	Very cobbly clay, very gravelly clay	GC	A-6 A-7, A-2		0-5	10-40	50-75	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC			0-10	20-45	35-70	20-50
	24-34	Unweathered bedrock				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
512: Vantage	In					Pct			
	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---
Clerf	0-9	Very cobbly clay loam	GC	A-6	0-10	30-45	60-80	50-70	40-65
	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2	0-5	10-40	50-75	40-65	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-10	20-45	35-70	25-60	20-50
	24-34	Unweathered bedrock			---	---	---	---	---
513: Meloza	0-4	Clay loam	CL	A-6	0	0-5	95-100	95-100	85-100
	4-30	Clay loam, silty clay loam, clay	CH, CL	A-7	0	0-5	95-100	95-100	85-100
	30-42	Clay loam, silty clay loam, clay	CH, CL	A-7	0	0-5	85-100	80-100	70-100
	42-60	Sandy clay loam, clay loam, clay	CL, CH, SC	A-7, A-6	0	0-5	85-100	80-100	70-100
Cowiche	0-15	Loam	CL-ML, ML	A-4	0	0	95-100	90-100	75-95
	15-35	Clay loam, sandy clay loam, loam	CL, SC	A-6, A-2	0	0-5	95-100	85-100	50-85
	35-51	Clay loam, sandy clay loam, loam	CL, SC	A-6, A-2	0	0-15	90-100	80-100	50-85
	51-60	Sandy loam, loamy fine sand, very fine sandy loam	SC-SM, SM, SC	A-4, A-2	0	0-15	85-100	80-100	40-75
516: Selah	0-9	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	75-100
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6	0	0-20	65-95	55-90	50-85
	21-31	Cemented material			---	---	---	---	---
	31-60	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
517: Seiah-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-9	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	75-100
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6	0	0-20	65-95	55-90	50-85
	21-31 31-60	Cemented material Cemented material			---	---	---	---	---
519: Seiah-----	0-9	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	75-100
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6	0	0-20	65-95	55-90	50-85
	21-31 31-60	Cemented material Cemented material			---	---	---	---	---
523: Terlan-----	0-7	Gravelly loam	CL-ML, CL, SC, SC-SM	A-4	0	0-10	75-85	70-80	60-75
	7-15	Gravelly clay loam, gravelly loam	CL, GC, SC	A-6	0	0-15	70-85	65-80	55-75
	15-18	Very gravelly loam, gravelly loam, gravelly clay loam	GC, CL, SC	A-6	0	0-25	60-80	50-75	45-70
	18-26 26-60	Cemented material Cemented material			---	---	---	---	---
524: Terlan-----	0-7	Gravelly loam	CL-ML, CL, SC, SC-SM	A-4	0	0-10	75-85	70-80	60-75
	7-15	Gravelly clay loam, gravelly loam	CL, GC, SC	A-6	0	0-15	70-85	65-80	55-75
	15-18	Very gravelly loam, gravelly loam, gravelly clay loam	GC, CL, SC	A-6	0	0-25	60-80	50-75	45-70
	18-26 26-60	Cemented material Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--				
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40		
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					
525: Terlan-----	0-7	Gravelly loam	CL-ML, CL, SC, SC-SM	A-4	0	0-10	75-85	70-80	60-75		
	7-15	Gravelly clay loam, gravelly loam	CL, GC, SC	A-6	0	0-15	70-85	65-80	55-75		
	15-18	Very gravelly loam, gravelly loam, gravelly clay loam	GC, CL, SC	A-6	0	0-25	60-80	50-75	45-70		
	18-26	Cemented material			---	---	---	---	---		
	26-60	Cemented material			---	---	---	---	---		
532: Selah-----	0-9	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	75-100		
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95		
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6	0	0-20	65-95	55-90	50-85		
	21-31	Cemented material			---	---	---	---	---		
	31-60	Cemented material			---	---	---	---	---		
Terlan-----	0-7	Gravelly loam	CL-ML, CL, SC, SC-SM	A-4	0	0-10	75-85	70-80	60-75		
	7-15	Gravelly clay loam, gravelly loam	CL, GC, SC	A-6	0	0-15	70-85	65-80	55-75		
	15-18	Very gravelly loam, gravelly loam, gravelly clay loam	GC, CL, SC	A-6	0	0-25	60-80	50-75	45-70		
	18-26	Cemented material			---	---	---	---	---		
	26-60	Cemented material			---	---	---	---	---		
533: Selah-----	0-9	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	75-100		
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95		
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6	0	0-20	65-95	55-90	50-85		
	21-31	Cemented material			---	---	---	---	---		
	31-60	Cemented material			---	---	---	---	---		

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
535: Zen-----	In				Pct	Pct			
	0-7	Silt loam	CL-ML, CL	A-4	0	0	0	95-100	90-100
	7-12	Silt loam	CL-ML	A-4	0	0	0	95-100	90-100
	12-27	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	0	95-100	90-100
	27-30	Gravelly clay loam, loam, silt loam, gravelly loam	SC, CL, SC-SM	A-4, A-6	0	0-10	70-100	65-95	55-65
538: Zen-----	30-40	Unweathered bedrock			---	---	---	---	---
	0-7	Silt loam	CL-ML, CL	A-4	0	0	0	95-100	90-100
	7-12	Silt loam	CL-ML	A-4	0	0	0	95-100	90-100
	12-27	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	0	95-100	90-100
	27-30	Gravelly clay loam, loam, silt loam, gravelly loam	SC, CL, SC-SM	A-4, A-6	0	0-10	70-100	65-95	55-65
539: Zen-----	30-40	Unweathered bedrock			---	---	---	---	---
	0-7	Silt loam	CL-ML, CL	A-4	0	0	0	95-100	90-100
	7-12	Silt loam	CL-ML	A-4	0	0	0	95-100	90-100
	12-27	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	0	95-100	90-100
	27-30	Gravelly clay loam, loam, silt loam, gravelly loam	SC, CL, SC-SM	A-4, A-6	0	0-10	70-100	65-95	55-65
553: Ralock-----	30-40	Unweathered bedrock			---	---	---	---	---
	0-4	Ashy silt loam	ML	A-4	0	0-5	90-100	80-90	65-80
	4-14	Ashy silt loam, gravelly	ML	A-4	0	0-10	75-100	65-90	60-80
	14-27	ashy silt loam							
	14-27	Silt loam, gravelly clay loam, gravelly silt loam	CL	A-6	0	0-10	70-95	60-90	55-80
	27-36	Gravelly loam, gravelly silt loam, gravelly clay loam	SC	A-6, A-2	0-10	0-10	65-80	55-70	40-60
	36-60	Gravelly loam, very gravelly silt loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	0-20	50-65	40-60	35-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
554: Pachneum-----	In				Pct	Pct			
	0-8	Ashy loam							
	8-18	Ashy loam, ashy silt loam	ML			0	0	100	95-100
			ML			0	0	100	95-100
	18-26	Clay loam, silty clay loam	CL			0	0	100	95-100
	26-33	Clay loam, silty clay loam	CL			0	0	100	95-100
	33-47	Clay loam, silty clay loam	CL			0	0	100	95-100
557: Pachneum-----	47-60	Clay loam, silty clay loam	CL			0	0	100	95-100
	0-8	Ashy loam	ML						
	8-18	Ashy loam, ashy silt loam	ML			0	0	100	95-100
	18-26	Clay loam, silty clay loam	CL			0	0	100	95-100
	26-33	Clay loam, silty clay loam	CL			0	0	100	95-100
558: Argixerolls, north slopes----	33-47	Clay loam, silty clay loam	CL			0	0	100	95-100
	47-60	Clay loam, silty clay loam	CL			0	0	100	95-100
	0-14	Silt loam	CL						
	14-42	Gravelly silty clay loam, clay loam	ML			0	0-5	85-95	75-90
	42-60	Gravelly clay loam, clay, very gravelly clay loam	GC, CL, SC			0-10	0-30	50-90	40-80
Durixerolls, north slopes----									
	0-9	Very gravelly loam	GC, SC			0-5	0-25	55-70	45-60
	9-12	Very gravelly loam, gravelly clay loam, very cobbly clay loam	GC, GM, SC, SM			0-5	0-25	55-75	45-65
	12-21	Extremely gravelly loam, very cobbly loam, very gravelly clay loam	GC, GM			0-10	10-40	40-65	30-55
	21-31	Cemented material				---	---	---	---
	31-60	Cemented material				---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
561: Elkheights-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-8	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100
	8-19	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100
	19-41	Loam	CL	A-6	0	0	100	90-100	85-100
	41-56	Gravelly loam, loam, clay loam	CL	A-6	0	0-5	85-100	75-95	70-90
	56-60	Very gravelly sandy clay loam	GC	A-2	0-5	0-20	40-60	30-50	25-40
563: Mendian-----	0-6	Very fine sandy loam	SC-SM, CL, CL-ML, SC	A-4	0	0	95-100	90-100	80-95
	6-13	Very fine sandy loam, fine sandy loam	SC-SM, CL, CL-ML, SC	A-4	0	0	95-100	90-100	80-95
	13-22	Sandy clay loam, fine sandy loam, very fine sandy loam	SC, CL, SC-SM	A-6	0	0	95-100	85-100	80-95
	22-38	Sandy clay loam	SC, CL, SC-SM	A-6, A-2, A-7	0	0-5	80-100	75-95	65-90
	38-46	Very gravelly sandy clay, very gravelly sandy clay loam	GC	A-2	0-5	5-20	30-65	25-55	20-45
	46-60	Extremely gravelly sandy clay loam, extremely gravelly sandy clay, very gravelly sandy clay loam	GC	A-2	0-5	10-30	25-55	20-45	15-35
570: Wipple-----	0-7	Cobbly clay loam	CL	A-6	0	25-40	80-100	70-100	65-100
	7-11	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2	0-10	5-15	50-65	40-55	35-50
	11-30	Very gravelly clay, very cobbly clay, extremely cobbly clay	GC	A-7, A-2	0-10	5-45	45-70	35-60	25-60
	30-50	Very cobbly clay loam, very cobbly clay, extremely cobbly clay loam	GC	A-7, A-2	0-10	15-45	45-70	35-60	30-60
	50-60	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
571: Whipple-----	In				Pct	Pct			
	0-7	Cobbly clay loam	CL			0	25-40	180-100	70-100
	7-11	Very gravelly clay loam, very cobbly clay loam	GC			0-10	5-15	150-65	40-55
	11-30	Very gravelly clay, very cobbly clay, extremely cobbly clay	GC			0-10	5-45	145-70	35-60
	30-50	Very cobbly clay loam, very cobbly clay, extremely cobbly clay loam	GC			0-10	15-45	145-70	35-60
	50-60	Unweathered bedrock			---	---	---	---	---
580: Woldale-----	0-5	Clay loam	CL			0	0	195-100	85-100
	5-31	Clay	CH			0	0	195-100	85-100
	31-43	Very gravelly clay, very cobbly clay	GC, CH			0	15-30	150-70	40-60
	43-60	Extremely cobbly clay loam, very cobbly clay	GC, GP-GC			0	30-45	135-60	25-50
		loam, extremely gravelly sandy clay loam							
584: Varodale-----	0-22	Clay	CH			0	0	195-100	85-100
	22-38	Clay	CH			0	0	195-100	85-100
	38-44	Clay	CH			0	0	195-100	85-100
	44-60	Sandy clay, gravelly sandy clay, clay	CH			0	0	175-100	70-100
585: Varodale-----	0-22	Clay	CH			0	0	195-100	85-100
	22-38	Clay	CH			0	0	195-100	85-100
	38-44	Clay	CH			0	0	195-100	85-100
	44-60	Sandy clay, gravelly sandy clay, clay	CH			0	0	175-100	70-100
586: Vanderbilt, moderately wet-	0-8	Ashy loam	CL			0	0	100	95-100
	8-28	Ashy loam	CL			0	0	100	95-100
	28-38	Clay loam	CL			0	0	100	95-100
	38-60	Clay loam	CL			0	0	100	95-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
587: Argixerolls----	In				Pct	Pct			
	0-17	Silt loam	CL	A-6	0	0	85-95	75-90	65-85
	17-49	Silty clay loam, clay loam	ML	A-7, A-6	0	0-5	85-95	75-90	65-85
	49-60	Gravelly clay loam, clay, very gravelly clay loam	GC, SC, CL	A-7, A-2	0-10	0-30	50-90	40-80	30-70
589: Nack-----	0-6	Gravelly ashy loam	SC	A-6	0	0-10	75-90	55-75	50-65
	6-15	Clay loam, sandy clay loam, gravelly sandy clay loam	CL, SC	A-6	0	0-10	75-100	65-90	55-80
	15-60	Extremely gravelly sandy clay, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam	GC, GP	A-2	0-5	25-50	15-50	10-35	5-30
	0-12	Gravelly ashy loam	SC-SM, GC, GC-GM, SC	A-4	0	0-15	60-85	55-75	50-65
Brickmill-----	12-28	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, very cobbly ashy loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-40
	28-38	Extremely gravelly sandy loam, very gravelly sandy clay loam, extremely cobbly sandy loam	GC, GC-GM, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	38-49	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	49-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP	A-1	0-15	20-50	15-50	10-35	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
590: Brickmill-----	In				Pct	Pct			
	0-12	Gravelly ashly loam	SC-SM, GC, GC-GM, SC	A-4	0	0-15	60-85	55-75	50-65
	12-28	Very gravelly ashly sandy loam, extremely gravelly ashly sandy loam, very cobbly ashly loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-40
	28-38	Extremely gravelly sandy loam, very gravelly sandy clay loam, extremely cobbly sandy loam	GC, GC-GM, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	38-49	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	49-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP	A-1	0-15	20-50	15-50	10-35	5-30
	0-8	Ashy loam	CL	A-6	0	0	100	95-100	90-100
	8-15	Ashy loam, ashly clay loam	CL	A-6	0	0	100	95-100	90-100
	15-28	Ashy clay loam	CL, SC	A-6	0	0-5	90-100	80-100	65-95
	28-35	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2	0-10	0-15	45-60	35-50	25-40
592: Umtanum-----	35-60	Extremely gravelly sandy clay loam, very gravelly sandy clay loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-15	25-55	15-45	5-35
	0-9	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	9-16	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100
	16-42	Silty clay loam, clay loam, clay	CL	A-7	0	0	100	95-100	90-100
	42-60	Silty clay loam, clay, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4	10	40
593: Canaspatch-----	In				Pct	Pct			
	0-4	Very cobbly loam	SC		0-10	25-50	70-80	60-70	55-65
	4-9	Very gravelly clay loam,	GC	A-4, A-6	0-10	10-35	50-65	40-60	25-50
		very cobbly clay loam		A-2, A-7					
	9-15	Extremely cobbly clay,	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
Whiskeydick-----		very cobbly clay,							
		extremely gravelly clay							
	15-25	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC, GC-GM, SC-SM	A-4, A-2, A-6	0-10	30-45	60-75	50-65	40-55
	4-10	Very cobbly clay loam,	GC	A-7	0-10	20-40	60-75	50-70	45-60
594: Canaspatch-----		very cobbly clay, very							
		gravelly clay loam							
	10-27	Very cobbly clay,	GC, SC	A-2, A-7	5-10	15-55	45-75	25-60	20-50
		extremely cobbly clay,							
	27-37	Unweathered bedrock			---	---	---	---	---
Whiskeydick-----									
	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65
	4-9	Very gravelly clay loam,	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50
		very cobbly clay loam							
	9-15	Extremely cobbly clay,	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
595: Canaspatch-----		very cobbly clay,							
		extremely gravelly clay							
	15-25	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC, GC-GM, SC-SM	A-4, A-2, A-6	0-10	30-45	60-75	50-65	40-55
	4-10	Very cobbly clay loam,	GC	A-7	0-10	20-40	60-75	50-70	45-60
Whiskeydick-----		very cobbly clay, very							
		gravelly clay loam							
	10-27	Very cobbly clay,	GC, SC	A-2, A-7	5-10	15-55	45-75	25-60	20-50
		extremely cobbly clay,							
	27-37	Unweathered bedrock			---	---	---	---	---
595: Canaspatch-----									
	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65
	4-9	Very gravelly clay loam,	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50
		very cobbly clay loam							
	9-15	Extremely cobbly clay,	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
Whiskeydick-----		very cobbly clay,							
		extremely gravelly clay							
	15-25	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	
595: Whiskeydick-----	In				Pct	Pct				
	0-4	Very cobbly loam	GC, GC-GM, SC-SM	A-4, A-2, A-6	0-10	30-45	60-75	50-65	40-55	
	4-10	Very cobbly clay loam, very cobbly clay, very gravelly clay loam	GC	A-7	0-10	20-40	60-75	50-70	45-60	
	10-27	Very cobbly clay, extremely cobbly clay, very gravelly clay	GC, SC	A-2, A-7	5-10	15-55	45-75	25-60	20-50	
	27-37	Unweathered bedrock			---	---	---	---	---	
598: Zillah-----	0-7	Silt loam	CL-ML	A-4	0	0	100	100	95-100	
	7-15	Silt loam	CL-ML	A-4	0	0	100	100	95-100	
	15-32	Silt loam, very fine sandy loam	CL-ML	A-4	0	0	100	100	95-100	
	32-51	Very fine sandy loam, silt loam	CL-ML	A-4	0	0	100	100	95-100	
	51-60	Very gravelly loamy sand, loamy sand, gravelly loamy sand, extremely gravelly coarse sand	SM, GM	A-2, A-1	0	0	50-100	45-100	40-75	
601: Brickmill-----	0-12	Gravelly ashly loam	SC-SM, GC, SC, GC-GM	A-4	0	0-15	60-85	55-75	50-65	
	12-28	Very gravelly ashly sandy loam, extremely gravelly ashly sandy loam, very cobbly ashly loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-40	
	28-38	Extremely gravelly sandy loam, very gravelly sandy clay loam, extremely cobbly sandy loam	GC, GC-GM, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45	
	38-49	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45	
	49-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP	A-1	0-15	20-50	15-50	10-35	5-30	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
602: Brickmill-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-12	Gravelly ashly loam	SC-SM, GC, GC-GM, SC	A-4	0	0-15	60-85	55-75	50-65
	12-28	Very gravelly ashly sandy loam, extremely gravelly ashly sandy loam, very cobbly ashly loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-40
	28-38	Extremely gravelly sandy loam, very gravelly sandy clay loam, extremely cobbly sandy loam	GC, GC-GM, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	38-49	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	49-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP	A-1	0-15	20-50	15-50	10-35	5-30
	0-6	Ashy clay loam	CL	A-6, A-7	0	0	100	100	80-10
	6-13	Ashy clay loam, ashly loam	CL	A-6, A-7	0	0	100	85-100	70-10
	13-22	Clay, cobbly clay loam, gravelly clay	CL, CH, SC	A-7	0	0-25	80-100	65-85	55-80
	22-26	Cemented material			---	---	---	---	---
603: Reeser-----	26-58	Cemented material			---	---	---	---	---
	58-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
604: Reeser-----	In				Pct	Pct			
	0-6	Ashy clay loam	CL	A-6, A-7	0	0	100	100	80-10
	6-13	Ashy clay loam, ashy loam	CL	A-6, A-7	0	0	100	85-100	70-10
	13-22	Clay, cobbly clay loam, gravelly clay	CL, CH, SC	A-7	0	0-25	80-100	65-85	55-80
	22-26	Cemented material			---	---	---	---	---
	26-58	Cemented material			---	---	---	---	---
	58-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
605: Disage-----	0-4	Very cobbly loam	GC, SC	A-6					
	4-9	Very gravelly clay loam, very cobbly clay loam	GM	A-2, A-7	0-10	25-45	60-75	50-65	40-55
	9-18	Very cobbly clay loam, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	5-40	50-70	40-60	30-50
	18-28	Unweathered bedrock			0-10	20-60	35-60	25-55	15-45
					---	---	---	---	---
606: Disage-----	0-4	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	40-55
	4-9	Very gravelly clay loam, very cobbly clay loam	GM	A-2, A-7	0-10	5-40	50-70	40-60	30-50
	9-18	Very cobbly clay loam, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-60	35-60	25-55	15-45
	18-28	Unweathered bedrock							
					---	---	---	---	---
607: Disage-----	0-4	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	40-55
	4-9	Very gravelly clay loam, very cobbly clay loam	GM	A-2, A-7	0-10	5-40	50-70	40-60	30-50
	9-18	Very cobbly clay loam, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-60	35-60	25-55	15-45
	18-28	Unweathered bedrock							
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Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4		
							10		
607: Clenage-----	In				Pct	Pct			
	0-3	Very gravelly loam	GC, SC	A-2, A-6	0-5	15-25	50-75	40-55	30-45
	3-16	Very gravelly clay loam, gravelly clay loam	SC, GC	A-6, A-2, A-7	0-5	0-25	55-85	45-75	35-65
	16-25	Very gravelly clay, extremely gravelly clay, extremely cobbly clay	GC	A-2, A-7	0-15	10-60	35-60	25-55	15-45
	25-35	Unweathered bedrock			---	---	---	---	---
609: Ackna-----	0-8	Ashy loam	CL	A-6	0	0	90-100	85-100	75-10
	8-18	Ashy loam, ashy silt loam	CL	A-6	0	0	90-100	85-100	75-10
	18-28	Loam	CL	A-6	0	0-5	90-100	80-95	70-90
	28-42	Extremely gravelly sandy clay loam, extremely gravelly loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-45	30-55	25-45	15-35
	42-55	Extremely gravelly sandy loam, extremely gravelly sandy clay loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-45	30-55	20-45	15-35
	55-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely gravelly coarse sand	GP-GM, GP	A-1	0-20	10-40	20-50	10-35	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	Pct			
							Pct			
610: Akna-----	In									
	0-8	Ashy loam	CL	A-6	0	0	90-100	85-100	75-10	
	8-18	Ashy loam, ashy silt loam	CL	A-6	0	0	90-100	85-100	75-10	
	18-28	Loam	CL	A-6	0	0-5	90-100	80-95	70-90	
	28-42	Extremely gravelly sandy clay loam, extremely gravelly loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-45	30-55	25-45	15-35	
	42-55	Extremely gravelly sandy loam, extremely gravelly sandy clay loam, extremely gravelly clay loam	GP-GC	A-2	0-15	10-45	30-55	20-45	15-35	
612: Nitcha-----	0-12	Ashy loam	CL	A-6	0	0	100	95-100	90-10	
	12-42	Sandy clay loam, fine sandy loam	CL, SC	A-6	0	0	100	95-100	70-95	
	42-60	Sandy loam, fine sandy loam	CL-ML, CL	A-4	0	0	100	95-100	65-85	
	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65	
	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50	
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45	
614: Canaspatch-----	15-25	Unweathered bedrock			---	---	---	---	---	
	0-8	Ashy silt loam	CL	A-6	0	0	100	95-100	90-10	
	8-29	Ashy loam, ashy silt loam	CL	A-6	0	0	100	95-100	85-10	
	29-46	Loam, silt loam, clay loam	CL	A-6	0	0	100	95-100	85-10	
	46-60	Sandy loam	CL-ML, CL	A-4	0	0	100	95-100	65-85	
618: Nitzel, gravelly substratum-----	0-8	Ashy silt loam	CL	A-6	0	0	100	95-100	90-10	
	8-29	Ashy loam, ashy silt loam	CL	A-6	0	0	100	95-100	85-10	
	29-46	Loam, silt loam, clay loam	CL	A-6	0	0	100	95-100	85-10	
	46-60	Sandy loam	CL-ML, CL	A-4	0	0	100	95-100	65-85	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
621: Mitta, flooded--	In				Pct	Pct			
	0-6	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	6-15	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	15-34	Ashy silt loam, ash loam	CL	A-6	0	0	100	95-100	90-100
	34-49	Silty clay loam, silt loam, clay loam	CL	A-6	0	0	100	90-100	85-100
	49-60	Silty clay loam, clay loam, loam	CL	A-6	0	0	100	90-100	85-100
622: Manastash-----									
	0-5	Loam	CL	A-6	0	0	100	100	90-100
	5-10	Loam	CL	A-6	0	0	100	100	90-100
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-100
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
623: Manastash-----	25-42	Cemented material			---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---
	0-5	Loam	CL	A-6	0	0	100	100	90-100
	5-10	Loam	CL	A-6	0	0	100	100	90-100
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-100
624: Manastash-----	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	25-42	Cemented material			---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---
	0-5	Loam	CL	A-6	0	0	100	100	90-100
624: Manastash-----	5-10	Loam	CL	A-6	0	0	100	100	90-100
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-100
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	25-42	Cemented material			---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--			
			Unified	AASHTO	inches	inches	4			
							10			
625: Manastash-----	In				Pct	Pct				
	0-5	Loam	CL	A-6	0	0	100	100	100	90-10
	5-10	Loam	CL	A-6	0	0	100	100	100	90-10
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-10	
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-10	
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-10	
	25-42	Cemented material			---	---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---	---
	0-5	Gravelly loam	CL, GC, SC	A-4, A-6	0	0-10	65-85	60-75	55-70	
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2	0-10	10-40	30-60	25-50	15-40	
Durtash-----	14-19	Extremely gravelly clay, very gravelly clay	GC	A-2	0-10	5-40	30-70	25-60	15-35	
	19-29	Cemented material			---	---	---	---	---	---
	29-60	Cemented material			---	---	---	---	---	---
	0-5	Loam	CL	A-6	0	0	100	100	100	90-10
	5-10	Loam	CL	A-6	0	0	100	100	100	90-10
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-10	
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-10	
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-10	
	25-42	Cemented material			---	---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---	---
626: Manastash-----	0-5	Loam	CL	A-6	0	0	100	100	100	90-10
	5-10	Loam	CL	A-6	0	0	100	100	100	90-10
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-10	
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-10	
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-10	
	25-42	Cemented material			---	---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---	---
	0-9	Loam	CL-MI, CL	A-4	0	0	95-100	85-100	75-10	
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95	
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6	0	0-20	65-95	55-90	50-85	
Selah-----	21-31	Cemented material			---	---	---	---	---	---
	31-60	Cemented material			---	---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
626: Durtash-----	In				Pct	Pct			
	0-5	Gravelly loam	CL, GC, SC	A-4, A-6	0	0-10	65-85	60-75	55-70
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2	0-10	10-40	30-60	25-50	15-40
	14-19	Extremely gravelly clay, GC very gravelly clay	GC	A-2	0-10	5-40	30-70	25-60	15-35
	19-29	Cemented material			---	---	---	---	---
	29-60	Cemented material			---	---	---	---	---
632: Manastash-----	0-5	Loam	CL	A-6	0	0	100	100	90-100
	5-10	Loam	CL	A-6	0	0	100	100	90-100
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-100
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	25-42	Cemented material			---	---	---	---	---
633: Nack-----	42-60	Cemented material			---	---	---	---	---
	0-6	Ashy loam	CL	A-6	0	0-5	90-100	80-100	65-95
	6-15	Clay loam, sandy clay loam, gravelly sandy clay loam	CL, SC	A-6	0	0-10	75-100	65-90	55-80
	15-60	Extremely gravelly sandy clay, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam	GC, GP	A-2	0-5	25-50	15-50	10-35	5-30
634: Manastash-----	0-5	Loam	CL	A-6	0	0	100	100	90-100
	5-10	Loam	CL	A-6	0	0	100	100	90-100
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-100
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	25-42	Cemented material			---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
634: Durtash-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-5	Cobbly loam	CL, CL-ML	A-4, A-6	0	20-35	75-90	70-80	65-75
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2	0-10	10-40	30-60	25-50	15-40
	14-19	Extremely gravelly clay, GC		A-2	0-10	5-40	30-70	25-60	15-35
	19-29	very gravelly clay			---	---	---	---	---
635: Opnish-----	29-60	Cemented material			---	---	---	---	---
	0-8	Ashy loam	CL						
	8-13	Ashy clay loam, ashy loam	CL	A-6	0	0	100	90-100	85-100
	13-26	Clay loam, sandy clay	CL, SC	A-7	0	0	95-100	80-100	65-90
	26-60	Extremely gravelly clay loam, very gravelly clay loam, extremely gravelly sandy clay	GC, GP-GC	A-2	0	10-30	15-55	15-45	5-35
637: Tanksel-----	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	85-100	75-90	55-85
	4-8	Ashy loam, ashy silt loam, gravelly ashy loam	CL, CL-ML	A-4	0-10	0-10	75-95	65-85	60-80
	8-17	Very gravelly ashy loam, gravelly ashy loam, gravelly ashy silt loam	GC, CL, CL- ML, GC-GM	A-4, A-2	0-10	0-10	55-85	45-75	40-70
	17-20	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	45-70	35-60	30-55
	20-28	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	30-60	20-50	15-45
28-38		Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4		
							10	10	40
637: Lainand-----	In				Pct	Pct			
	0-6	Ashy loam	CL-ML, ML	A-4	0	0	85-100	75-95	65-85
	6-12	Ashy loam, gravelly ash y loam	CL-ML, SM	A-4	0	0-5	170-95	60-90	50-80
	12-20	Cobbly ash loam, very gravelly ash loam, very cobbly ash loam	SC-SM, GM, GC-GM, SM, ML	A-4, A-2	0-10	5-25	55-90	45-85	35-70
	20-41	Very cobbly clay loam, extremely cobbly clay loam, extremely loam, extremely	GC	A-6, A-2	0-10	15-55	35-70	25-65	20-55
	41-60	Very cobbly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2, A-6	0-10	15-55	35-70	25-65	20-55
638: Tanksel-----	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	85-100	75-90	55-85
	4-8	Ashy loam, ash silt loam, gravelly ash y loam	CL, CL-ML	A-4	0-10	0-10	175-95	65-85	60-80
	8-17	Very gravelly ash loam, gravelly ash loam, gravelly ash silt loam	GC, CL, CL- ML, GC-GM	A-4, A-2	0-10	0-10	55-85	45-75	40-70
	17-20	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	45-70	35-60	30-55
	20-28	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	30-60	20-50	15-45
	28-38	Unweathered bedrock			---	---	---	---	---
Lainand-----	0-6	Ashy loam	CL-ML, ML	A-4	0	0	85-100	75-95	65-85
	6-12	Ashy loam, gravelly ash y loam	CL-ML, SM	A-4	0	0-5	170-95	60-90	50-80
	12-20	Cobbly ash loam, very gravelly ash loam, very cobbly ash loam	SC-SM, GM, GC-GM, SM, ML	A-4, A-2	0-10	5-25	55-90	45-85	35-70
	20-41	Very cobbly clay loam, extremely cobbly clay loam, extremely	GC	A-6, A-2	0-10	15-55	35-70	25-65	20-55
	41-60	Very cobbly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2, A-6	0-10	15-55	35-70	25-65	20-55

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches				
							4	10	40	
638: Canaspatch-----	In				Pct	Pct				
	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65	
	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50	
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45	
	15-25	Unweathered bedrock			---	---	---	---	---	
640: Elkheights-----	0-8	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100	
	8-19	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	
	19-41	Loam	CL	A-6	0	0	100	90-100	85-100	
	41-56	Gravelly loam, loam, clay loam	CL	A-6	0	0-5	85-100	75-95	70-90	
	56-60	Very gravelly sandy clay loam	GC	A-2	0-5	0-20	140-60	30-50	25-40	
644: Drino-----	0-3	Very gravelly loam	GC-GM, GM, SC-SM, SM	A-2, A-4	10-25	20-30	50-70	40-60	35-55	
	3-7	Very gravelly loam, very cobbly loam	GC-GM, GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45	
	7-19	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45	
	19-38	Extremely cobbly loam, very gravelly loam, extremely gravelly loam	GC, GC-GM	A-2, A-1	0-10	15-65	35-60	25-50	20-40	
	38-48	Unweathered bedrock			---	---	---	---	---	
Schappy-----	0-4	Silt loam	ML	A-4	0	0	100	100	90-100	
	4-32	Silt loam, loam	ML	A-4	0	0	95-100	90-100	85-100	
	32-43	Gravelly silt loam, cobbly silt loam, cobbly loam	CL-ML, ML	A-4	0	10-20	75-90	70-85	50-75	
	43-51	Very cobbly loam, extremely gravelly loam, extremely cobbly clay loam	GC	A-2, A-1	0-10	20-45	30-60	25-55	20-45	
	51-60	Unweathered bedrock			---	---	---	---	---	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number-		
			Unified	AASHTO	inches	inches	4	10	40
644: Fortyday-----	In				Pct	Pct			
	0-3	Cobbly loam	CL-ML, CL	A-4	0-10	10-30	70-95	60-80	55-75
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-35	50-65	40-60	35-55
	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	15-25	Unweathered bedrock			---	---	---	---	---
650: Tankssel-----	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	85-100	75-90	55-85
	4-8	Ashy loam, ash silt loam, gravelly ash loam	CL, CL-ML	A-4	0-10	0-10	75-95	65-85	60-80
	8-17	Very gravelly ash loam, gravelly ash loam, gravelly ash silt loam	GC, CL-ML, CL, GC-GM	A-4, A-2	0-10	0-10	55-85	45-75	40-70
	17-20	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	45-70	35-60	30-55
	20-28	Extremely cobbly clay loam, very gravelly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	30-60	20-50	15-45
Patron-----	28-38	Unweathered bedrock			---	---	---	---	---
	0-12	Gravelly ash silt loam	ML, SM, CL-ML, SC-SM	A-4	0	0-10	70-90	60-75	40-70
	12-35	Gravelly silty clay loam, gravelly clay loam	CL, SC	A-7	0	0-10	65-90	55-75	50-70
	35-60	Very gravelly clay loam, extremely gravelly clay, very cobbly clay	GC	A-2, A-7	0-10	10-30	35-60	25-50	20-45
	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65
Camaspatch-----	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
	15-25	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
656: Tanksel-----	In					Pct			
	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	0-10	85-100	75-90
	4-8	Ashy loam, ash silt loam, gravelly ash loam	CL, CL-ML	A-4	0-10	0-10	0-10	75-95	65-85
	8-17	Very gravelly ash loam, gravelly ash loam, gravelly ash silt loam	GC, CL, CL- ML, GC-GM	A-4, A-2	0-10	0-10	0-10	55-85	45-75
	17-20	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	10-40	45-70	35-60
	20-28	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	10-50	30-60	20-50
	28-38	Unweathered bedrock			---	---	---	---	---
Patron-----	0-12	Gravelly ash silt loam	ML, SM, CL- ML, SC-SM	A-4	0	0-10	0-10	70-90	60-75
	12-35	Gravelly silty clay loam, gravelly clay loam	CL, SC	A-7	0	0-10	0-10	65-90	55-75
	35-60	Very gravelly clay loam, extremely gravelly clay, very cobbly clay	GC	A-2, A-7	0-10	10-30	10-30	35-60	25-50
	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	25-50	70-80	60-70
Camaspach-----	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7	0-10	10-35	10-35	50-65	40-60
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
	15-25	Unweathered bedrock			---	---	---	---	---
658: Camaspach-----	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	25-50	70-80	60-70
	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7	0-10	10-35	10-35	50-65	40-60
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
	15-25	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4		
							10	10	40
658: Tankssel-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	85-100	75-90	55-85
	4-8	Ashy loam, ashly silt loam, gravelly ashly loam	CL, CL-ML	A-4	0-10	0-10	75-95	65-85	60-80
	8-17	Very gravelly ashly loam, gravelly ashly loam, gravelly ashly silt loam	GC, CL, CL- ML, GC-GM	A-4, A-2	0-10	0-10	55-85	45-75	40-70
	17-20	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	45-70	35-60	30-55
	20-28	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	30-60	20-50	15-45
	28-38	Unweathered bedrock			---	---	---	---	---
661: Dryssel-----	0-11	Loam	ML	A-4	0	0	95-100	85-100	75-100
	11-27	Silt loam, silty clay loam, loam	CL	A-6	0	0-5	95-100	85-100	75-95
	27-31	Loam, clay loam, gravelly clay loam	CL, GC, SC	A-6	0	0-10	65-95	55-90	50-85
	31-41	Cemented material			---	---	---	---	---
662: Ralock-----	0-4	Ashy silt loam	ML	A-4	0	0-5	90-100	80-90	65-80
	4-14	Ashy silt loam, gravelly ashy silt loam	ML	A-4	0	0-10	75-100	65-90	60-80
	14-27	Silt loam, gravelly clay loam, gravelly silt loam	CL	A-6	0	0-10	70-95	60-90	55-80
	27-36	Gravelly loam, gravelly silt loam, gravelly clay loam	SC	A-6, A-2	0-10	0-10	65-80	55-70	40-60
	36-60	Gravelly loam, very gravelly silt loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	0-20	50-65	40-60	35-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
662: Palerf-----	In					Pct			
	0-9	Gravelly ashly loam	ML, CL-ML	A-4					
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0	5-10	80-90	70-85	65-80
	27-35	Extremely gravelly clay, GC very cobbly clay, extremely cobbly clay loam			0-5	10-40	50-70	40-60	35-55
	35-45	Unweathered bedrock			0-10	20-45	35-60	25-55	20-45
663: Ralock-----	0-4	Ashy silt loam	ML	A-4					
	4-14	Ashy silt loam, gravelly ashy silt loam	ML	A-4	0	0-5	90-100	80-90	65-80
	14-27	Silt loam, gravelly clay loam, gravelly silt loam	CL	A-6	0	0-10	70-95	60-90	55-80
	27-36	Gravelly loam, gravelly silt loam, gravelly clay loam	SC		0-10	0-10	65-80	55-70	40-60
	36-60	Gravelly loam, very gravelly silt loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	0-20	50-65	40-60	35-50
Palerf-----	0-9	Gravelly ashly loam	ML, CL-ML	A-4					
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0	5-10	80-90	70-85	65-80
	27-35	Extremely gravelly clay, GC very cobbly clay, extremely cobbly clay loam			0-5	10-40	50-70	40-60	35-55
	35-45	Unweathered bedrock			0-10	20-45	35-60	25-55	20-45
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667: Laufer-----	0-3	Very cobbly loam	GC	A-6, A-2					
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-10	25-45	60-75	50-65	45-60
	7-10	Very cobbly clay loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50
	10-15	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay			0-10	10-35	50-65	40-60	30-50
	15-25	Unweathered bedrock	GC	A-2	0-10	20-50	35-55	25-50	20-40
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Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4		
							10		
667: Thiessen-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-3	Very cobbly loam							
	3-9	Very gravelly clay loam, very cobbly clay loam, very cobbly clay	GC	A-6, A-2	5-15	25-35	50-65	45-60	40-55
			GC	A-6, A-2	0-10	5-45	50-65	45-60	35-50
	9-22	Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay	GC	A-2	0-10	25-65	25-55	15-50	10-40
668: Laufer-----	22-32	Unweathered bedrock			---	---	---	---	---
	0-3	Very cobbly loam	GC	A-6, A-2	0-10	25-45	60-75	50-65	45-60
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50
	7-10	Very cobbly clay loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	10-35	50-65	40-60	30-50
	10-15	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay	GC	A-2	0-10	20-50	35-55	25-50	20-40
Thiessen-----	15-25	Unweathered bedrock			---	---	---	---	---
	0-3	Very cobbly loam	GC	A-6, A-2	5-15	25-35	50-65	45-60	40-55
	3-9	Very gravelly clay loam, very cobbly clay loam, very gravelly clay	GC	A-6, A-2	0-10	5-45	50-65	45-60	35-50
	9-22	Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay	GC	A-2	0-10	25-65	25-55	15-50	10-40
	22-32	Unweathered bedrock			---	---	---	---	---
Rubble land-----	0-60	Fragmental material			---	---	---	---	---
	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---
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Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
669: Zen-----	In				Pct	Pct			
	0-7	Silt loam	CL-ML, CL	A-4	0	0	95-100	90-100	80-100
	7-12	Silt loam	CL-ML	A-4	0	0	95-100	90-100	80-100
	12-27	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100
	27-30	Gravelly clay loam, loam, silt loam, gravelly loam	SC, CL, SC-SM	A-4, A-6	0	0-10	70-100	65-95	55-65
Grinrod-----	30-40	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC-GM, GC	A-2, A-4	0-10	30-45	45-70	35-60	25-55
	4-10	Very gravelly loam	GC-GM, GC	A-2, A-4	0-5	5-30	50-65	40-55	30-45
	10-27	Very gravelly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2	0-10	10-55	30-60	25-55	15-45
	27-37	Unweathered bedrock			---	---	---	---	---
670: Argabak-----	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GC, GC-GM, SC-SM	A-4, A-2, A-6	0-10	30-45	60-75	50-65	40-55
	4-10	Very cobbly clay loam, very cobbly clay, very gravelly clay loam	GC	A-7	0-10	20-40	60-75	50-70	45-60
Whiskeydick-----	10-27	Very cobbly clay, extremely cobbly clay, very gravelly clay	GC, SC	A-2, A-7	5-10	15-55	45-75	25-60	20-50
	27-37	Unweathered bedrock			---	---	---	---	---
	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---
672: Argabak-----	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---
	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
672: Mozen-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-5	Ashy silt loam	CL-ML, CL	A-4		0	0-5	95-100	85-95
	5-13	Ashy silt loam, ashy loam	CL-ML, CL	A-4		0	0-5	95-100	85-95
	13-22	Clay loam	CL	A-6, A-7		0	0-5	85-100	75-90
	22-28	Loam, clay loam	CL	A-6, A-7		0	0-5	85-100	75-90
	28-39	Loam, clay loam, gravelly clay loam	CL, SC	A-6, A-7		0	0-5	85-95	60-90
674: Durtash, gravelly-----	39-49	Unweathered bedrock			---	---	---	---	---
	0-5	Gravelly loam	CL, GC, SC	A-4, A-6		0	0-10	65-85	60-75
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2		0-10	10-40	30-60	25-50
	14-19	Extremely gravelly clay	GC	A-2		0-10	5-40	30-70	25-60
684: Nitzel-----	19-29	Very gravelly clay			---	---	---	---	---
	29-60	Cemented material			---	---	---	---	---
	0-8	Ashy silt loam	CL	A-6		0	0	100	95-100
	8-29	Ashy loam, ashy silt loam	CL	A-6		0	0	100	95-100
	29-46	Loam, silt loam, clay loam	CL	A-6		0	0	100	95-100
Weirman-----	46-60	Sandy loam	CL-ML, CL	A-4		0	0	100	95-100
	0-5	Gravelly sandy loam	SM, GM	A-2, A-1		0	0-5	55-80	50-75
	5-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1		0-5	0-15	40-60	30-50
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1		0-5	10-40	30-50	10-45

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	Pct	inches		
							>10	3-10	4
693: Tankself-----	In					Pct			
	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	85-100	75-90	155-85
	4-8	Ashy loam, ashly silt loam, gravelly ashly loam	CL, CL-ML	A-4	0-10	0-10	75-95	65-85	160-80
	8-17	Very gravelly ashly loam, gravelly ashly loam, gravelly ashly silt loam	GC, CL-ML, CL, GC-GM	A-4, A-2	0-10	0-10	55-85	45-75	140-70
	17-20	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	45-70	35-60	130-55
	20-28	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	30-60	20-50	115-45
	28-38	Unweathered bedrock			---	---	---	---	---
	0-17	Ashy silt loam	CL-ML, ML	A-4	0	0-5	95-100	90-100	180-95
	17-59	Silt loam, silty clay loam	CL	A-6	0	0-10	90-100	85-100	175-95
	59-60	Very gravelly loam, gravelly clay loam, cobbly silty clay loam	GC, CL, SC	A-6	0-10	0-20	50-80	45-75	135-70
695: Drino-----	0-3	Very gravelly loam	GC-GM, GM, SC-SM, SM	A-2, A-4	10-25	20-30	50-70	40-60	135-55
	3-7	Very gravelly loam, very cobbly loam	GC-GM, GM	A-2, A-4	0-10	10-40	50-55	40-55	135-45
	7-19	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-40	50-55	40-55	135-45
	19-38	Extremely cobbly loam, very gravelly loam, extremely gravelly loam	GC, GC-GM	A-2, A-1	0-10	15-65	35-60	25-50	120-40
	38-48	Unweathered bedrock			---	---	---	---	---
	0-4	Silt loam	ML	A-4	0	0	100	100	190-100
	4-32	Silt loam, loam	ML	A-4	0	0	95-100	90-100	185-100
	32-43	Gravelly silt loam, cobbly silt loam, cobbly loam	CL-ML, ML	A-4	0	10-20	75-90	70-85	150-75
	43-51	Very cobbly loam, extremely gravelly loam, extremely cobbly clay loam	GC	A-2, A-1	0-10	20-45	30-60	25-55	120-45
	51-60	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
695: Fortyday-----	In				Pct	Pct			
	0-3	Cobbly loam	CL-ML, CL	A-4	0-10	10-30	70-95	60-80	55-75
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-35	50-65	40-60	35-55
	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	15-25	Unweathered bedrock			---	---	---	---	---
697: Wockum-----	0-17	Ashy silt loam	CL-ML, ML	A-4	0	0-5	95-100	90-100	80-95
	17-59	Silt loam, silty clay loam	CL	A-6	0	0-10	90-100	85-100	75-95
	59-60	Very gravelly loam, gravelly clay loam, cobbly silty clay loam	GC, CL, SC	A-6	0-10	0-20	50-80	45-75	35-70
Blint-----	0-4	Very cobbly ash loam	ML, CL-ML	A-4	0-5	15-25	70-90	60-80	50-75
	4-10	Very gravelly ash loam, very gravelly ash silt loam	GM, GC-GM	A-2	0-10	5-25	45-55	35-50	25-45
	10-18	Very gravelly loam, very gravelly silt loam	GC	A-2	0-10	5-35	45-55	35-50	25-45
	18-22	Extremely cobbly silt loam, extremely gravelly loam, very cobbly clay loam	GC	A-2, A-6	0-10	15-60	35-60	25-50	20-45
	22-32	Unweathered bedrock			0	0	---	---	---
698: Wockum-----	0-17	Ashy silt loam	CL-ML, ML	A-4	0	0-5	95-100	90-100	80-95
	17-59	Silt loam, silty clay loam	CL	A-6	0	0-10	90-100	85-100	75-95
	59-60	Very gravelly loam, gravelly clay loam, cobbly silty clay loam	GC, CL, SC	A-6	0-10	0-20	50-80	45-75	35-70

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
698: Blint-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Very cobbly ashy loam	ML, CL-ML	A-4	0-5	15-25	70-90	60-80	50-75
	4-10	Very gravelly ashy loam, very gravelly ashy silt loam	GM, GC-GM	A-2	0-10	5-25	45-55	35-50	25-45
	10-18	Very gravelly loam, very gravelly silt loam	GC	A-2	0-10	5-35	45-55	35-50	25-45
	18-22	Extremely cobbly silt loam, extremely gravelly loam, very cobbly clay loam	GC	A-2, A-6	0-10	15-60	35-60	25-50	20-45
	22-32	Unweathered bedrock			0	0	---	---	---
Windry-----	0-3	Very cobbly loam	GC, CL	A-4	0-10	30-50	50-75	45-70	40-65
	3-7	Very gravelly clay loam, very gravelly loam, very cobbly loam	GC	A-4, A-2	0-10	10-30	50-70	35-60	35-55
	7-15	Extremely cobbly clay loam, extremely gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	20-60	35-60	25-55	20-50
	15-19	Unweathered bedrock			0	0	---	---	---
706: Kayak-----	0-6	Gravelly ashy loam	ML	A-4	5-10	0-15	75-95	70-90	55-75
	6-17	Ashy loam, gravelly ashy loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	75-100	65-90	55-80
	17-29	Ashy fine sandy loam, ashy sandy clay loam, gravelly ashy sandy loam	CL, SC, CL- ML, SC-SM	A-4, A-6	0	0-10	75-100	65-90	50-80
	29-39	Fine sandy loam, sandy clay loam, gravelly sandy loam	CL, SC-SM, CL-ML, SC	A-4, A-6	0	0-10	75-100	65-90	50-80
	39-60	Extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-30	30-50	20-40	15-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
712: Malaga-----	In				Pct	Pct			
	0-4	Cobbly sandy loam	ML						
	4-9	Gravelly sandy loam, gravelly fine sandy loam, gravelly loam	SM A-4, A-2		0-10 0	15-25 0-10	85-95 75-85	80-90 55-75	65-75 45-60
	9-12	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM A-1, A-2		0	0-15	40-60	30-55	20-40
	12-19	Extremely gravelly sandy loam	GM A-1						
	19-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very cobbly sand	GP-GM, GP, SP, SP-SM		0-10 0-10	5-25 10-35	30-45 25-60	20-35 15-55	15-25 10-30
713: Malaga-----	0-4	Cobbly sandy loam	ML						
	4-9	Gravelly sandy loam, gravelly fine sandy loam, gravelly loam	SM A-4, A-2		0-10 0	15-25 0-10	85-95 75-85	80-90 55-75	65-75 45-60
	9-12	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM A-1, A-2		0	0-15	40-60	30-55	20-40
	12-19	Extremely gravelly sandy loam	GM A-1						
	19-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very cobbly sand	GP-GM, GP, SP, SP-SM		0-10 0-10	5-25 10-35	30-45 25-60	20-35 15-55	15-25 10-30
715: Weirman-----	0-5	Gravelly sandy loam	SM, GM						
	5-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM		0 0-5	0-5 0-15	55-80 40-60	50-75 30-50	40-50 5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP		0-5	10-40	30-50	10-45	5-20

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
717: Fortyday-----	In				Pct	Pct			
	0-3	Very cobbly loam	GC-GM, SC-SM	A-4, A-2	0-10	25-40	50-75	45-65	40-60
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-35	50-65	40-60	35-55
	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	15-25	Unweathered bedrock			---	---	---	---	---
Drino-----	0-3	Very gravelly loam	GC-GM, GM, SC-SM, SM	A-2, A-4	10-25	20-30	50-70	40-60	35-55
	3-7	Very gravelly loam, very cobbly loam	GC-GM, GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
	7-19	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
	19-38	Extremely cobbly loam, very gravelly loam, extremely gravelly loam	GC, GC-GM	A-2, A-1	0-10	15-65	35-60	25-50	20-40
	38-48	Unweathered bedrock			---	---	---	---	---
Nevo-----	0-2	Extremely gravelly sandy loam	GM	A-1	0	15-30	30-45	20-35	10-25
	2-8	Very gravelly clay loam, very cobbly loam, extremely gravelly loam	GC	A-2, A-6	0-5	10-45	35-65	25-55	20-50
	8-18	Unweathered bedrock			---	---	---	---	---
718: Fortyday-----	0-3	Very stony loam	GC-GM, SC-SM	A-4, A-2	10-25	20-25	50-75	45-70	40-65
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-35	50-65	40-60	35-55
	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	15-25	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
718: Drino-----	In				Pct	Pct			
	0-3	Very gravelly loam	GC-GM, GM, SC-SM, SM	A-2, A-4	10-25	20-30	50-70	40-60	35-55
	3-7	Very gravelly loam, very cobbly loam	GC-GM, GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
	7-19	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
	19-38	Extremely cobbly loam, very gravelly loam, extremely gravelly loam	GC, GC-GM	A-2, A-1	0-10	15-65	35-60	25-50	20-40
	38-48	Unweathered bedrock			---	---	---	---	---
Nevo-----	0-2	Very cobbly loam	GM, GC-GM	A-4	0-5	35-40	65-75	55-65	45-55
	2-8	Very gravelly clay loam, GC very cobbly loam, extremely gravelly loam	GC	A-2, A-6	0-5	10-45	35-65	25-55	20-50
	8-18	Unweathered bedrock			---	---	---	---	---
720: Nanum-----	0-6	Ashy sandy clay loam	CL	A-6	0	0	100	95-100	70-90
	6-15	Ashy loam, ashly clay loam	CL	A-6	0	0	100	95-100	90-100
	15-28	Ashy clay loam	CL, SC	A-6	0	0-5	90-100	80-100	65-95
	28-35	Very gravelly clay loam, GC very gravelly sandy clay loam	GC	A-2	0-10	0-15	45-60	35-50	25-40
	35-60	Extremely gravelly sandy clay loam, very gravelly sandy clay loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-15	25-55	15-45	5-35
724: Manastash-----	0-5	Loam	CL	A-6	0	0	100	100	90-100
	5-10	Loam	CL	A-6	0	0	100	100	90-100
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-100
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	25-42	Cemented material			---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments			Percentage pass- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	Pct	4	10	40
724: Durtash-----	In					Pct				
	0-5	Gravelly loam	CL, GC, SC	A-4, A-6						
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2	0	0-10	0-10	65-85	60-75	55-70
	14-19	Extremely gravelly clay, GC		A-2	0-10	5-40	30-70	25-60	15-40	15-40
	19-29	very gravelly clay			---	---	---	---	---	---
725: Argabak-----	29-60	Cemented material			---	---	---	---	---	---
	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45	30-45
	2-6	Extremely gravelly loam, GC		A-2, A-6	0-10	15-40	30-60	20-50	15-45	15-45
	6-16	very gravelly clay loam, very cobbly loam Unweathered bedrock			---	---	---	---	---	---
Vantage-----	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	45-60	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay								
	18-28	Unweathered bedrock			---	---	---	---	---	---
741: Vantage-----	0-5	Very stony loam	GC	A-6	10-25	15-20	60-75	50-65	45-60	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50	20-50
	18-26	Unweathered bedrock			0	0	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
741: Vantage, thin surface-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-3	Very stony loam	GC		10-25	15-20	60-75	50-65	45-60
	3-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60
742: Drino-----	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---
	0-3	Very gravelly loam	GC-GM, GM, SC-SM, SM	A-2, A-4	10-25	20-30	50-70	40-60	35-55
	3-7	Very gravelly loam, very cobbly loam	GC-GM, GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
Fortyday-----	7-19	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
	19-38	Extremely cobbly loam, very gravelly loam, extremely gravelly loam	GC, GC-GM	A-2, A-1	0-10	15-65	35-60	25-50	20-40
	38-48	Unweathered bedrock			---	---	---	---	---
	0-3	Cobbly loam	CL-ML, CL	A-4	0-10	10-30	70-95	60-80	55-75
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-35	50-65	40-60	35-55
744: Palerf-----	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	15-25	Unweathered bedrock			---	---	---	---	---
	0-9	Gravelly ashly loam	ML, CL-ML	A-4	0	5-10	80-90	70-85	65-80
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0-5	10-40	50-70	40-60	35-55
35-45	27-35	Extremely gravelly clay, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-45	35-60	25-55	20-45
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Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches			
							4	10	40
744: Vantage-----	In				Pct	Pct			
	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---
745: Zen-----	0-7	Silt loam	CL-ML, CL	A-4	0	0	95-100	90-100	80-100
	7-12	Silt loam	CL-ML	A-4	0	0	95-100	90-100	80-100
	12-27	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100
	27-30	Gravelly clay loam, loam, silt loam, gravelly loam	SC, CL, SC-SM	A-4, A-6	0	0-10	70-100	65-95	55-65
	30-40	Unweathered bedrock			---	---	---	---	---
Benwy-----	0-10	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	80-90
	10-18	Silt loam, loam	ML	A-4	0	0	90-100	85-100	75-90
	18-33	Gravelly silt loam, gravelly loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-95	60-85
	33-45	Gravelly silt loam, loam, gravelly clay loam	CL, CL-ML	A-4, A-6	0	0-10	70-95	65-90	55-80
	45-55	Cemented material			---	---	---	---	---
Laric-----	0-3	Very gravelly loam	GC-GM, GM	A-2, A-1, A-4 A-6	0-5	0-15	40-60	30-50	25-45
	3-9	Gravelly clay loam, gravelly loam	CL		0	0-15	70-85	60-75	55-70
	9-19	Unweathered bedrock			---	---	---	---	---
747: Palerf-----	0-9	Gravelly ashly loam	ML, CL-ML	A-4	0	5-10	80-90	70-85	65-80
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0-5	10-40	50-70	40-60	35-55
	27-35	Extremely gravelly clay, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-45	35-60	25-55	20-45
	35-45	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
747: Ralock-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Ashy silt loam							
	4-14	Ashy silt loam, gravelly	ML		0	0-5	90-100	80-90	65-80
		ashy silt loam	ML		0	0-10	175-100	165-90	60-80
	14-27	Silt loam, gravelly clay	CL		0	0-10	170-95	60-90	55-80
		loam, gravelly silt loam							
	27-36	Gravelly loam, gravelly silt loam, gravelly clay loam	SC		0-10	0-10	65-80	55-70	40-60
	36-60	Gravelly loam, very gravelly silt loam, very gravelly clay loam	GC		0-10	0-20	50-65	40-60	35-50
Vantage-----	0-5	Very cobbly loam	GC, SC						
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC		0-10	25-45	60-75	50-65	45-60
					0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay							
	18-28	Unweathered bedrock			---	---	---	---	---
748: Malaga-----	0-4	Gravelly sandy loam	SM, GM						
	4-9	Gravelly sandy loam, gravelly fine sandy loam, gravelly loam	SM		0	0-5	60-85	50-75	40-65
					0	0-10	175-85	55-75	45-60
	9-12	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM		0	0-15	40-60	30-55	20-40
	12-19	Extremely gravelly sandy loam	GM						
	19-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very cobbly sand	GP-CM, GP, SP, SP-SM		0-10	5-25	30-45	20-35	15-25
					0-10	10-35	25-60	15-55	10-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
751: Vantage-----	In					Pct			
	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---
Clerf-----	0-9	Very cobbly clay loam	GC	A-6	0-10	30-45	60-80	50-70	40-65
	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2	0-5	10-40	50-75	40-65	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-10	20-45	35-70	25-60	20-50
	24-34	Unweathered bedrock			---	---	---	---	---
	0-60	Fragmental material			---	---	---	---	---
755: Nevo-----	0-2	Very cobbly loam	GM, GC-GM	A-4	0-5	35-40	65-75	55-65	45-55
	2-8	Very gravelly clay loam, very cobbly loam, extremely gravelly loam	GC	A-2, A-6	0-5	10-45	35-65	25-55	20-50
	8-18	Unweathered bedrock			---	---	---	---	---
	0-3	Very cobbly loam	GC-GM, SC-SM	A-4, A-2	0-10	25-40	50-75	45-65	40-60
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-35	50-65	40-60	35-55
Fortyday-----	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	15-25	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
758: Sohappy-----	In				Pct	Pct			
	0-4	Silt loam							
	4-32	Silt loam, loam	ML	A-4	0	0	100	100	90-100
	32-43	Gravelly silt loam,	ML	A-4	0	0	95-100	90-100	85-100
		cobbly silt loam,	CL-ML, ML	A-4	0	10-20	75-90	70-85	50-75
		cobbly loam							
Fortyday-----	43-51	Very cobbly loam,	GC	A-2, A-1	0-10	20-45	30-60	25-55	20-45
		extremely gravelly							
		loam, extremely cobbly							
		clay loam							
	51-60	Unweathered bedrock			---	---	---	---	---
772: Haploxerolls-----	0-3	Cobbly loam	CL-ML, CL	A-4	0-10	10-30	70-95	60-80	55-75
	3-6	Very gravelly loam, very	GC, GC-GM	A-2, A-4	0-10	10-35	50-65	40-60	35-55
		cobbly loam							
	6-15	Extremely cobbly loam,	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
		extremely gravelly clay							
		loam, very gravelly							
Weirman-----	15-25	Unweathered bedrock			---	---	---	---	---
	0-17	Silt loam	ML	A-4	0	0-10	95-100	85-100	75-100
	17-60	Fine sandy loam,	ML, SM, GM	A-4, A-1, A-2	0-5	0-15	45-100	35-100	25-100
		gravelly silt loam,							
		very gravelly sandy							
772: Haploxerolls-----	0-5	Very cobbly sandy loam	GM, SM	A-1	10-20	20-25	50-65	40-55	15-30
	5-15	Very gravelly loamy sand	GP, GP-GM,	A-1	0-5	0-15	40-60	30-50	5-25
			SP, SP-SM						
	15-60	Extremely gravelly loamy	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
		sand, very gravelly							
		loamy sand, very							
772: Haploxerolls-----		gravelly sand,							
		extremely gravelly sand							

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							>10	4	10
772: Aquolls-----	In					Pct	Pct		
	0-5	Cobbly fine sandy loam	ML, SM	A-4					
	5-12	Gravelly sandy loam, very cobbly loam, very gravelly sandy loam	GM, ML, SM	A-2, A-1, A-4	0-5	20-30	180-95	70-85	50-75
	12-18	Extremely gravelly sandy loam, very gravelly sandy loam, gravelly loam	GM, ML, SM	A-2, A-1, A-4	0-5	0-40	145-85	40-75	25-65
	18-60	Extremely gravelly loamy sand, extremely gravelly sand, very gravelly loamy sand	GP-GM, GP	A-1	0-5	0-40	120-50	10-45	5-20
774: Drino-----	0-3	Very gravelly loam	GC-GM, GM, SC-SM, SM	A-2, A-4	10-25	20-30	150-70	40-60	35-55
	3-7	Very gravelly loam, very cobbly loam	GC-GM, GM	A-2, A-4	0-10	10-40	150-55	40-55	35-45
	7-19	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-40	150-55	40-55	35-45
	19-38	Extremely cobbly loam, very gravelly loam, extremely gravelly loam	GC, GC-GM	A-2, A-1	0-10	15-65	135-60	25-50	20-40
	38-48	Unweathered bedrock			---	---	---	---	---
Rubble land-----	0-60	Fragmental material			---	---	---	---	---
	0-60	Unweathered bedrock			---	---	---	---	---
787: Terlan-----	0-7	Gravelly loam	CL-ML, CL, SC, SC-SM	A-4	0	0-10	175-85	70-80	60-75
	7-15	Gravelly clay loam, gravelly loam	CL, GC, SC	A-6	0	0-15	170-85	65-80	55-75
	15-18	Very gravelly loam, gravelly loam, gravelly clay loam	GC, CL, SC	A-6	0	0-25	160-80	50-75	45-70
	18-26	Cemented material			---	---	---	---	---
	26-60	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
787: Durtash-----	0-5	Gravelly loam	CL, GC, SC	A-4, A-6					
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2	0	0-10	165-85	60-75	55-70
					0-10	10-40	30-60	25-50	15-40
	14-19	Extremely gravelly clay, very gravelly clay	GC	A-2	0-10	5-40	30-70	25-60	15-35
	19-29	Cemented material			---	---	---	---	---
	29-60	Cemented material			---	---	---	---	---
Selah-----	0-9	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	75-100
	9-17	Silty clay loam, clay loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95
	17-21	Cobbly clay loam, clay loam, gravelly clay loam	CL, GC, SC	A-7, A-6	0	0-20	165-95	55-90	50-85
	21-31	Cemented material			---	---	---	---	---
	31-60	Cemented material			---	---	---	---	---
789: Deedale-----	0-12	Clay loam	CL	A-6	0	0	100	95-100	90-100
	12-25	Clay	CH	A-7	0	0	95-100	85-100	80-100
	25-31	Clay	CH	A-7	0	0	95-100	85-100	80-100
	31-54	Clay	CH	A-7	0	0-5	90-100	80-100	70-95
	54-60	Extremely gravelly sandy clay loam, very gravelly sandy clay loam	GC	A-2	0-15	10-30	25-55	15-45	5-35
790: Mitta-----	0-6	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	6-15	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	15-34	Ashy silt loam, ashy loam	CL	A-6	0	0	100	95-100	90-100
	34-49	Silty clay loam, silt loam, clay loam	CL	A-6	0	0	100	90-100	85-100
	49-60	Silty clay loam, clay loam, loam	CL	A-6	0	0	100	90-100	85-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4		
							10	40	
791: Mitta, drained--	In				Pct	Pct			
	0-6	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	6-15	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	15-34	Ashy silt loam, ash loam	CL	A-6	0	0	100	95-100	90-100
	34-49	Silty clay loam, silt loam, clay loam	CL	A-6	0	0	100	90-100	85-100
	49-60	Silty clay loam, clay loam, loam	CL	A-6	0	0	100	90-100	85-100
792: Brickmill-----	0-12	Gravelly ash loam	SC-SM, GC, GC-GM, SC	A-4	0	0-15	60-85	55-75	50-65
	12-28	Very gravelly ash sandy loam, extremely gravelly ash sandy loam, very cobbly ash loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-40
	28-38	Extremely gravelly sandy loam, very gravelly sandy clay loam, extremely cobbly sandy loam	GC, GC-GM, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	38-49	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC, GP-GC	A-2	0-5	10-50	30-60	25-50	15-45
	49-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP	A-1	0-15	20-50	15-50	10-35	5-30
793: Zillah-----	0-7	Silt loam	CL-ML	A-4	0	0	100	100	95-100
	7-15	Silt loam	CL-ML	A-4	0	0	100	100	95-100
	15-32	Silt loam, very fine sandy loam	CL-ML	A-4	0	0	100	100	95-100
	32-51	Very fine sandy loam, silt loam	CL-ML	A-4	0	0	100	100	95-100
	51-60	Very gravelly loamy sand, loamy sand, gravelly loamy sand, extremely gravelly coarse sand	SM, GM	A-2, A-1	0	0	50-100	45-100	40-75

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
793: Kayak-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-6	Ashy loam	CL	A-4	0	0-5	90-100	80-100	65-95
	6-17	Ashy loam, gravelly ash y loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	175-100	165-90	55-80
	17-29	Ashy fine sandy loam, ashy sandy clay loam, gravelly ash y sandy loam	CL, SC, CL- ML, SC-SM	A-4, A-6	0	0-10	175-100	165-90	50-80
	29-39	Fine sandy loam, sandy clay loam, gravelly sandy loam	CL, SC, CL- ML, SC-SM	A-4, A-6	0	0-10	175-100	165-90	50-80
	39-60	Extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-30	30-50	20-40	15-30
794: Kayak-----	0-6	Ashy loam	CL	A-4	0	0-5	90-100	80-100	65-95
	6-17	Ashy loam, gravelly ash y loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	175-100	165-90	55-80
	17-29	Ashy fine sandy loam, ashy sandy clay loam, gravelly ash y sandy loam	CL, SC, CL- ML, SC-SM	A-4, A-6	0	0-10	175-100	165-90	50-80
	29-39	Fine sandy loam, sandy clay loam, gravelly sandy loam	CL, SC-SM, SC, CL-ML	A-4, A-6	0	0-10	175-100	165-90	50-80
	39-60	Extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-30	30-50	20-40	15-30
Weirman-----	0-9	Gravelly sandy loam	SM, GM	A-2, A-1	0	0-5	55-80	50-75	40-50
	9-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
795: Nack-----	In				Pct	Pct			
	0-6	Gravelly ashy loam	SC						
	6-15	Clay loam, sandy clay loam, gravelly sandy clay loam	CL, SC		0	0-10	75-90	55-75	50-65
					0	0-10	75-100	65-90	55-80
	15-60	Extremely gravelly sandy clay, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam	GC, GP		0-5	25-50	15-50	10-35	5-30
Opnish-----	0-8	Ashy loam	CL		0	0	100	90-100	85-100
	8-13	Ashy clay loam, ashy loam	CL		0	0	100	90-100	85-100
	13-26	Clay loam, sandy clay	CL, SC		0	0	95-100	80-100	65-90
	26-60	Extremely gravelly clay loam, very gravelly clay loam, extremely gravelly sandy clay	GC, GP-GC		0	10-30	15-55	15-45	5-35
796: Brickmill-----	0-12	Gravelly ashy loam	SC-SM, GC, GC-GM, SC		0	0-15	60-85	55-75	50-65
	12-28	Very gravelly ashy sandy loam, extremely gravelly ashy sandy loam, very cobbly ashy loam	GC-GM, GC		0-5	10-40	35-60	30-50	20-40
	28-38	Extremely gravelly sandy loam, very gravelly sandy clay loam, extremely cobbly sandy loam	GC, GC-GM, GP-GC		0-5	10-50	30-60	25-50	15-45
	38-49	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC, GP-GC		0-5	10-50	30-60	25-50	15-45
	49-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP		0-15	20-50	15-50	10-35	5-30

Table 8.--Engineering Properties--Continued

[illegible]

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
799:									
Brysil1-----	0-9	Gravelly ashly loam	SC-SM, CL-ML	A-4					
	9-15	Very gravelly ashly loam, extremely gravelly ashly sandy loam	GC-GM, GC	A-2	0	0-10	75-90	55-75	50-65
					0-5	10-40	35-60	30-50	20-45
	15-25	Very gravelly sandy clay loam, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam							
					0-5	10-50	30-60	25-50	15-45
	25-48	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC	A-2	0-10	10-50	30-60	25-50	15-45
	48-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP-GM	A-1	0-10	25-50	15-50	10-35	5-30
800:									
Brysil1-----	0-9	Gravelly ashly loam	SC-SM, CL	A-4					
	9-15	Very gravelly ashly loam, extremely gravelly ashly sandy loam	GC-GM, GC	A-2	0	0-10	75-90	55-75	50-65
					0-5	10-40	35-60	30-50	20-45
	15-25	Very gravelly sandy clay loam, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam							
					0-5	10-50	30-60	25-50	15-45
	25-48	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC	A-2	0-10	10-50	30-60	25-50	15-45
	48-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP-GM	A-1	0-10	25-50	15-50	10-35	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
801: Brysill-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-9	Cobbly ashy loam	CL-ML, CL	A-4	0	20-35	75-90	70-80	60-75
	9-15	Very gravelly ashy loam, extremely gravelly ashy sandy loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-45
	15-25	Very gravelly sandy clay loam, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam	GC	A-2	0-5	10-50	30-60	25-50	15-45
	25-48	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC	A-2	0-10	10-50	30-60	25-50	15-45
	48-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP-GM	A-1	0-10	25-50	15-50	10-35	5-30
802: Brysill-----	0-9	Cobbly ashy loam	CL-ML, CL	A-4	0	20-35	75-90	70-80	60-75
	9-15	Very gravelly ashy loam, extremely gravelly ashy sandy loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-45
	15-25	Very gravelly sandy clay loam, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam	GC	A-2	0-5	10-50	30-60	25-50	15-45
	25-48	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC	A-2	0-10	10-50	30-60	25-50	15-45
	48-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP-GM	A-1	0-10	25-50	15-50	10-35	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4		
							10	10	40
803: Brysil-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-9	Very cobbly ashy loam	GC-GM, SC-SM	A-2, A-4	0-5	30-45	50-70	45-60	35-55
	9-15	Very gravelly ashy loam, extremely gravelly ashy sandy loam	GC-GM, GC	A-2	0-5	10-40	35-60	30-50	20-45
	15-25	Very gravelly sandy clay loam, extremely gravelly sandy clay	GC	A-2	0-5	10-50	30-60	25-50	15-45
		loam, extremely gravelly sandy clay							
		loam, extremely cobbly							
		sandy clay loam							
	25-48	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC	A-2	0-10	10-50	30-60	25-50	15-45
		Extremely gravelly loamy GW-GM, GP-GM	A-1		0-10	25-50	15-50	10-35	5-30
	48-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand							
804: Benwy-----	0-10	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	80-90
	10-18	Silt loam, loam	ML	A-4	0	0	90-100	85-100	75-90
	18-33	Gravelly silt loam, gravelly loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-95	60-85
	33-45	Gravelly silt loam, loam, gravelly clay loam	CL, CL-ML	A-4, A-6	0	0-10	70-95	65-90	55-80
	45-55	Cemented material			---	---	---	---	---
806: Weirman, very gravelly sandy loam-----	0-5	Very gravelly sandy loam	GM, GP-GM, SM	A-1	0-5	0-5	40-60	30-50	15-35
	5-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
806: Weirman, very cobbly sandy loam-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-4	Very cobbly sandy loam	GM, SM	A-1	10-20	20-25	50-65	40-55	15-30
	4-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
807: Brysill-----	0-9	Cobbly ashly loam	CL-ML, CL	A-4					
	9-15	Very gravelly ashly loam, extremely gravelly ashly sandy loam	GC-GM, GC	A-2	0	20-35	75-90	70-80	60-75
					0-5	10-40	35-60	30-50	20-45
	15-25	Very gravelly sandy clay loam, extremely gravelly sandy clay loam, extremely cobbly sandy clay loam	GC	A-2	0-5	10-50	30-60	25-50	15-45
	25-48	Extremely gravelly sandy loam, very gravelly sandy loam, extremely cobbly sandy loam	GC-GM, GC	A-2	0-10	10-50	30-60	25-50	15-45
	48-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GW-GM, GP-GM	A-1	0-10	25-50	15-50	10-35	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4		
							10	10	40
807: Ackna-----	In				Pct	Pct			
	0-8	Ashy loam	CL	A-6	0	0	90-100	85-100	75-100
	8-18	Ashy loam, ash silt loam	CL	A-6	0	0	90-100	85-100	75-100
	18-28	Loam	CL	A-6	0	0-5	90-100	80-95	70-90
	28-42	Extremely gravelly sandy clay loam, extremely gravelly loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-45	30-55	25-45	15-35
	42-55	Extremely gravelly sandy loam, extremely gravelly sandy clay loam, extremely gravelly clay loam	GP-GC	A-2	0-15	10-45	30-55	20-45	15-35
809: Weirman-----	55-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely gravelly coarse sand	GP-GM, GP	A-1	0-20	10-40	20-50	10-35	5-30
	0-5	Very gravelly sandy loam	GM, GP-GM, SM	A-1	0-5	0-5	40-60	30-50	15-35
	5-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
	0-6	Ashy sandy loam	SM	A-4	0-5	0-5	100	100	65-75
	6-17	Ashy loam, gravelly ash loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	175-100	165-90	55-80
Kayak-----	17-29	Ashy fine sandy loam, ashy sandy clay loam, gravelly ash sandy loam	CL, SC, CL-ML, SC-SM	A-4, A-6	0	0-10	175-100	165-90	50-80
	29-39	Fine sandy loam, sandy clay loam, gravelly sandy loam	CL, SC-SM, SC, CL-ML	A-4, A-6	0	0-10	175-100	165-90	50-80
	39-60	Extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-30	30-50	20-40	15-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	Fragments inches	3-10		
							>10	10	40
809: Zillah-----	<i>In</i>					<i>Pct</i>	<i>Pct</i>		
	0-7	Silt loam	CL-ML	A-4		0	0	100	95-10
	7-15	Silt loam	CL-ML	A-4		0	0	100	95-10
	15-32	Silt loam, very fine sandy loam	CL-ML	A-4		0	0	100	95-10
	32-51	Very fine sandy loam, silt loam	CL-ML	A-4		0	0	100	95-10
	51-60	Very gravelly loamy sand, loamy sand, gravelly loamy sand, extremely gravelly coarse sand	SM, GM	A-2, A-1		0	0	50-100	45-100
814: Argixerolls, moist, north slopes-----	0-4	Ashy loam	CL	A-6		0-5	0-25	80-100	75-90
	4-12	Gravelly clay loam, silty clay loam, clay loam	CL, SC	A-7, A-6		0	0-10	65-95	55-90
	12-60	Very gravelly clay loam, gravelly clay, gravelly clay loam	GC, SC	A-2, A-7		0-5	0-25	40-80	30-70
815: Argixerolls, moist, south slopes-----	0-6	Cobbly loam	CL	A-6		0-5	10-25	80-100	75-90
	6-12	Gravelly clay loam, silty clay loam, clay loam	CL, SC	A-7, A-6		0	0-10	65-95	55-90
	12-22	Gravelly clay loam, very gravelly sandy clay loam, very gravelly clay loam	GC, SC, CL	A-7, A-2, A-6		0-5	10-35	55-85	45-75
	22-60	Very gravelly clay loam, gravelly clay, extremely gravelly sandy clay loam	GC, SC	A-2, A-7		0-5	15-35	40-80	30-70

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
816: Patron, cobbly ashy silt loam	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-12	Cobbly ashy silt loam	ML, SM, CL- ML, SC-SM	A-4	0	0-20	70-90	60-75	40-70
	12-35	Gravelly silty clay loam, gravelly clay loam	CL, SC	A-7	0	0-10	65-90	55-75	50-70
	35-60	Very gravelly clay loam, extremely gravelly clay, very cobbly clay	GC	A-2, A-7	0-10	10-30	35-60	25-50	20-45
Patron-----	0-12	Gravelly ashy silt loam	ML, SM, CL- ML, SC-SM	A-4	0	0-10	70-90	60-75	40-70
	12-35	Gravelly silty clay loam, gravelly clay loam	CL, SC	A-7	0	0-10	65-90	55-75	50-70
	35-60	Very gravelly clay loam, extremely gravelly clay, very cobbly clay	GC	A-2, A-7	0-10	10-30	35-60	25-50	20-45
817: Manastash-----	0-5	Loam	CL	A-6	0	0	100	100	90-100
	5-10	Loam	CL	A-6	0	0	100	100	90-100
	10-15	Loam, gravelly loam	CL	A-6	0	0-5	95-100	85-100	75-100
	15-22	Clay, gravelly clay, gravelly clay loam	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	22-25	Gravelly clay, sandy clay, clay	CH, CL, SC	A-7, A-2	0	0-15	70-100	60-100	55-100
	25-42	Cemented material			---	---	---	---	---
	42-60	Cemented material			---	---	---	---	---
818: Umtanum-----	0-9	Ashy silt loam	CL	A-6	0	0	100	95-100	90-100
	9-16	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100
	16-42	Silty clay loam, clay loam, clay	CL	A-7	0	0	100	95-100	90-100
	42-60	Silty clay loam, clay, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
819: Millhouse-----	<i>In</i>					<i>Pct</i>	<i>Pct</i>		
	0-4	Cobbly ashy loam	CL-ML, CL	A-4					
	4-14	Very gravelly ashy loam, very gravelly ashy sandy loam, extremely gravelly ashy loam	GC-GM, GC	A-2, A-4	0	20-30	75-90	70-80	60-75
					0-5	0-35	35-65	30-55	20-50
	14-28	Extremely gravelly sandy clay loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2					
					0-5	10-40	25-55	20-45	10-40
	28-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GP-GM, GP	A-1					
					0-5	25-50	15-50	10-35	5-30
820: Modsel, ashy loam-----	0-7	Ashy loam	ML	A-4					
	7-10	Clay loam, gravelly clay loam, cobbly clay loam	CL, GC, SC	A-6, A-7	0	0-5	90-100	80-100	70-95
	10-16	Gravelly clay loam, cobbly clay loam	SC, GC	A-7	0-5	0-30	65-95	60-85	50-80
	16-20	Very gravelly clay, extremely gravelly clay, very gravelly sandy clay	GC	A-2	0-5	0-30	65-85	55-75	45-70
					0-5	10-35	30-65	25-55	15-50
	20-60	Extremely gravelly sandy clay loam, extremely gravelly sandy clay, extremely cobbly clay loam	GC	A-2					
					0-5	10-45	30-50	25-40	15-35

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
820: Mottled, cobbly ashy loam-----	In				Pct	Pct			
	0-7	Cobbly ashy loam	ML	A-4	0	20-30	75-90	70-80	60-75
	7-10	Clay loam, gravelly clay loam, cobbly clay loam	CL, GC, SC	A-6, A-7	0-5	0-30	65-95	60-85	50-80
	10-16	Gravelly clay loam, cobbly clay loam	SC, GC	A-7	0-5	0-30	65-85	55-75	45-70
	16-20	Very gravelly clay, extremely gravelly clay, very gravelly sandy clay	GC	A-2	0-5	10-35	30-65	25-55	15-50
822: Reeser-----	20-60	Extremely gravelly sandy clay loam, extremely gravelly sandy clay, extremely cobbly clay loam	GC	A-2	0-5	10-45	30-50	25-40	15-35
	0-6	Ashy clay loam	CL	A-6, A-7	0	0	100	100	80-10
	6-13	Ashy clay loam, ashy loam	CL	A-6, A-7	0	0	100	85-100	70-10
	13-22	Clay, cobbly clay loam, gravelly clay	CL, CH, SC	A-7	0	0-25	80-100	65-85	55-80
	22-26	Cemented material			---	---	---	---	---
Reelow-----	26-58	Cemented material			---	---	---	---	---
	58-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
	0-2	Ashy clay loam	CL	A-6, A-7	0	0-10	90-100	80-100	70-95
	2-6	Ashy clay loam, ashy loam, gravelly ashy clay loam	CL, SC	A-6, A-7	0	0-10	70-100	65-90	50-85
	6-14	Gravelly clay	SC, GC	A-7	0-5	0-15	60-85	55-75	45-70
	14-18	Cemented material			---	---	---	---	---
Reelow-----	18-56	Cemented material			---	---	---	---	---
	56-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
822: Sketter-----	In				Pct	Pct			
	0-6	Cobbly ashly loam	CL-ML, CL	A-4					
	6-10	Gravelly ashly loam, very gravelly ashly loam	GC, SC, CL	A-6, A-2, A-7	0	20-35	75-90	70-80	60-75
	10-21	Extremely cobbly sandy clay, very gravelly clay, very gravelly clay loam	GC, GP-GC	A-2	0-5	10-45	30-55	20-45	10-40
	21-24	Cemented material			---	---	---	---	---
	24-55	Cemented material			---	---	---	---	---
	55-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
823: Millhouse-----	0-4	Cobbly ashly loam	CL-ML, CL	A-4					
	4-14	Very gravelly ashly loam, very gravelly ashly sandy loam, extremely gravelly ashly loam	GC-GM, GC	A-2, A-4	0-5	0-35	35-65	30-55	20-50
	14-28	Extremely gravelly sandy clay loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2	0-5	10-40	25-55	20-45	10-40
	28-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GP-GM, GP	A-1	0-5	25-50	15-50	10-35	5-30
824: Pachneum-----	0-8	Ashy loam	ML	A-4	0	0	100	95-100	90-100
	8-18	Ashy loam, ashly silt loam	ML	A-4	0	0	100	95-100	90-100
	18-26	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	26-33	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	33-47	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	47-60	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--			
			Unified	AASHTO	inches	3-10 inches				
							4	10	40	
825: Pachneum-----	In				Pct	Pct				
	0-8	Ashy loam								
	8-18	Ashy loam, ashy silt loam	ML	A-4	0	0	100	95-100	90-100	
	18-26	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	
	26-33	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	
	33-47	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	
	47-60	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	
828: Swauk-----	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	
829: Swauk-----	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	
830: Swauk-----	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	
Qualla-----	0-7	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100	
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	
	38-42	Clay loam	CL	A-7	0	0	90-100	90-100	85-100	
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	85-100	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	
831: Qualla-----	In					Pct	Pct			
	0-7	Loam	CL-ML, CL	A-4		0	0	100	90-100	85-100
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100	85-100
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100	85-100
	38-42	Clay loam	CL	A-7		0	0	90-100	90-100	85-100
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7		0	0-5	90-100	90-100	85-100
832: Qualla-----	0-7	Loam	CL-ML, CL	A-4		0	0	100	90-100	85-100
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100	85-100
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100	85-100
	38-42	Clay loam	CL	A-7		0	0	90-100	90-100	85-100
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7		0	0-5	90-100	90-100	85-100
833: Swauk-----	0-5	Loam	CL-ML, CL	A-4		0	0	95-100	85-100	80-95
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7		0	0	85-100	75-100	70-95
	18-31	Clay, gravelly clay	CH	A-7		0	0	75-100	70-100	65-95
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7		0	0-5	75-100	65-95	60-90
835: Swauk-----	0-5	Loam	CL-ML, CL	A-4		0	0	95-100	85-100	80-95
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7		0	0	85-100	75-100	70-95
	18-31	Clay, gravelly clay	CH	A-7		0	0	75-100	70-100	65-95
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7		0	0-5	75-100	65-95	60-90
Qualla-----	0-7	Loam	CL-ML, CL	A-4		0	0	100	90-100	85-100
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100	85-100
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100	85-100
	38-42	Clay loam	CL	A-7		0	0	90-100	90-100	85-100
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7		0	0-5	90-100	90-100	85-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
838: Nosai-----	In				Pct	Pct			
	0-15	Ashy silt loam	CL	A-6		0	0	100	95-100
	15-26	Clay loam, silty clay loam, silt loam	CL	A-6		0	0	100	95-100
	26-32	Clay loam, silty clay loam	CL	A-6, A-7		0	0	95-100	85-100
	32-44	Sandy clay loam, gravelly sandy clay loam, gravelly clay loam	CL, GC	A-6, A-7		0	0-5	70-100	60-95
839: Vanderbilt-----	44-60	Very gravelly sandy clay loam, extremely gravelly sandy clay loam	GC, GC-GM, GP-GC	A-2, A-1, A- 4, A-6	0-10	5-30	30-60	20-50	15-45
	0-8	Ashy loam	CL	A-6, A-4		0	0	100	95-100
	8-28	Ashy loam	CL	A-6, A-4		0	0	100	95-100
	28-38	Clay loam	CL	A-6		0	0	100	95-100
	38-60	Clay loam	CL	A-6		0	0	100	95-100
841: Metser-----	0-9	Clay loam	CL	A-6		0	0	100	95-100
	9-15	Clay	CH	A-7		0	0	100	95-100
	15-30	Clay	CH	A-7		0	0-5	100	85-100
	30-37	Very gravelly sandy clay, very gravelly clay	GC	A-2	0-10	10-25	45-60	35-50	25-40
	37-60	Extremely gravelly sandy clay, very gravelly sandy clay loam, extremely gravelly sandy clay loam	GC, GP-GC	A-2					
842: Durtash-----	0-5	Cobbly loam	CL, CL-ML	A-4, A-6		0	20-35	75-90	70-80
	5-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-10	10-40	30-60	25-50	15-40
	14-19	Extremely gravelly clay, GC very gravelly clay	GC	A-2	0-10	5-40	30-70	25-60	15-35
	19-29	Cemented material			---	---	---	---	---
	29-60	Cemented material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10	4		
							10	10	40
843: Reelow-----	In				Pct	Pct			
	0-2	Gravelly ashy clay loam	CL, GC, SC	A-6, A-7	0	0-10	70-85	60-75	50-70
	2-6	Ashy clay loam, ashy loam, gravelly ashy clay loam	CL, SC	A-6, A-7	0	0-10	70-100	65-90	50-85
	6-14	Gravelly clay	SC, GC	A-7	0-5	0-15	60-85	55-75	45-70
	14-18	Cemented material			---	---	---	---	---
	18-56	Cemented material			---	---	---	---	---
	56-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
Reeser-----	0-6	Ashy clay loam	CL	A-6, A-7	0	0	100	100	80-100
	6-13	Ashy clay loam, ashy loam	CL	A-6, A-7	0	0	100	85-100	70-100
	13-22	Clay, cobbly clay loam, gravelly clay	CL, CH, SC	A-7	0	0-25	80-100	65-85	55-80
	22-26	Cemented material			---	---	---	---	---
	26-58	Cemented material			---	---	---	---	---
	58-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
Sketter-----	0-6	Cobbly ashy loam	CL-ML, CL	A-4					
	6-10	Gravelly ashy loam, very gravelly ashy loam	GC, CL, SC	A-6, A-2, A-7	0	0-20	75-90	70-80	60-75
	10-21	Extremely cobbly sandy clay, very gravelly clay, very gravelly clay loam	GC, GP-GC	A-2	0-5	10-45	30-55	20-45	10-40
	21-24	Cemented material			---	---	---	---	---
	24-55	Cemented material			---	---	---	---	---
	55-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
844: Metmill, very gravelly ash loam-----	In				Pct	Pct			
	0-6	Very gravelly ash loam	GC-GM, GM	A-4, A-2	0	10-25	45-65	40-55	30-50
	6-14	Ashy loam, gravelly ash loam	CL-ML, ML	A-4	0	0-10	75-100	70-95	60-90
	14-22	Very gravelly clay loam	GC	A-6, A-2, A-7	0-5	10-40	45-70	40-60	30-55
850: Reelow-----	22-60	Extremely gravelly sandy clay loam, very gravelly clay loam, very gravelly sandy clay loam	GC	A-2	0-5	10-40	30-65	25-55	15-50
852: Durtash-----	0-2	Ashy clay loam	CL	A-6, A-7	0	0-10	90-100	80-100	70-95
	2-6	Ashy clay loam, ash loam, gravelly ash clay loam	CL, SC	A-6, A-7	0	0-10	70-100	65-90	50-85
	6-14	Gravelly clay	SC, GC	A-7	0-5	0-15	60-85	55-75	45-70
	14-18	Cemented material			---	---	---	---	---
	18-56	Cemented material			---	---	---	---	---
	56-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
	0-7	Loam	CL	A-6	0	0-5	80-95	75-90	70-85
	7-14	Very gravelly clay loam, very cobbly clay loam, extremely gravelly clay	GC, GP-GC	A-2	0-10	10-40	30-60	25-50	15-40
	14-19	Extremely gravelly clay, GC							
	19-29	very gravelly clay			---	---	---	---	---
	29-60	Cemented material			---	---	---	---	---
		Cemented material							

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-			
			Unified	AASHTO	inches	inches	4	10	40	
853: Nint-----	In				Pct	Pct				
	0-9	Gravelly ashly loam	SM, GM, ML	A-4, A-2	5-10	0-10	60-90	50-75	35-65	
	9-13	Very gravelly clay loam	GC, SC	A-2, A-6	0-10	10-30	40-75	30-60	20-50	
	13-19	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6, A-7	0-10	15-35	40-70	30-55	20-45	
	19-38	Very gravelly clay loam, GC extremely gravelly clay loam, extremely cobbly clay loam		A-2	0-10	15-55	35-65	25-50	15-40	
McDaniel-----	38-48	Unweathered bedrock			---	---	---	---	---	
	0-14	Gravelly ashly loam	SC-SM, GM	A-4, A-2	0-5	0-15	60-90	50-75	35-60	
	14-19	Gravelly ashly loam, very gravelly ashly loam	GC-GM, GC	A-4, A-2	0-5	0-30	60-80	50-75	35-60	
	19-24	Very cobbly clay loam, extremely gravelly clay loam, very gravelly clay loam	GC, SC	A-6, A-2	0-10	10-35	50-75	40-60	30-45	
	24-32	Very cobbly clay loam, GC very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6	0-10	10-35	45-70	35-60	20-45	
854: Shinn-----	32-60	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	20-60	30-70	20-60	15-45	
	0-60	Fragmental material			---	---	---	---	---	
	0-2	Very cobbly ashly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-5	25-35	50-70	40-55	30-45	
	2-6	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45	
	6-9	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	15-75	35-60	25-50	20-45	
Rubble land-----	9-18	Unweathered bedrock			---	---	---	---	---	
	0-60	Fragmental material			---	---	---	---	---	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4		
							10	10	40
854: Shushuskin-----	In				Pct	Pct			
	0-4	Ashy loam	ML	A-4	0	0	100	95-100	90-100
	4-8	Ashy loam, ashly silt loam	ML	A-4	0	0	100	95-100	90-100
	8-13	Ashy loam, ashly silt loam	ML	A-4	0	0	100	95-100	90-95
	13-19	Loam, silt loam, clay loam	CL	A-6, A-7	0	0	90-100	80-95	70-90
	19-23	Clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	80-95	70-90
	23-32	Very gravelly clay loam, clay loam, gravelly clay loam	SC, CL	A-6, A-2, A-7	0	15-35	55-95	45-90	35-85
	32-42	Unweathered bedrock			---	---	---	---	---
855: Swauk-----	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90
	0-8	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100
	8-19	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100
	19-41	Loam	CL	A-6	0	0	100	90-100	85-100
	41-56	Gravelly loam, loam, clay loam	CL	A-6	0	0-5	85-100	75-95	70-90
Elkheights-----	56-60	Very gravelly sandy clay loam	GC	A-2	0-5	0-20	40-60	30-50	25-40
	0-2	Very cobbly ashly loam	GC	A-6, A-4	0-5	30-45	55-70	50-60	45-60
	2-5	Ashy clay loam	CL	A-6, A-7	0	0-5	85-100	75-95	65-90
	5-8	Gravelly clay, clay loam, gravelly clay loam	CL, GC, SC	A-7	0-5	0-15	70-100	60-90	50-80
	8-11	Cemented material			---	---	---	---	---
	11-37	Cemented material			---	---	---	---	---
	37-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-10	5-25	30-45	20-35	15-25

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
858: Shinn-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-2	Very cobbly ashly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-5	25-35	50-70	40-55	30-45
	2-6	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	6-9	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	15-75	35-60	25-50	20-45
	9-18	Unweathered bedrock			---	---	---	---	---
	0-8	Ashy loam	ML	A-4	0	0	100	95-100	90-100
	8-18	Ashy loam, ashly silt loam	ML	A-4	0	0	100	95-100	90-100
Pachneum-----	18-26	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	26-33	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	33-47	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	47-60	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	0-9	Gravelly ashly loam	SM, GM, ML	A-4, A-2	5-10	0-10	60-90	50-75	35-65
	9-13	Very gravelly clay loam	GC, SC	A-2, A-6	0-10	10-30	40-75	30-60	20-50
	13-19	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-7, A-6	0-10	15-35	40-70	30-55	20-45
Nint-----	19-38	Very gravelly clay loam, extremely gravelly clay loam, extremely cobbly clay loam	GC	A-2	0-10	15-55	35-65	25-50	15-40
	38-48	Unweathered bedrock			---	---	---	---	---
	0-3	Very cobbly loam	GC	A-6, A-2	0-10	25-45	60-75	50-65	45-60
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50
	7-10	Very cobbly clay loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	10-35	50-65	40-60	30-50
	10-15	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay	GC	A-2	0-10	20-50	35-55	25-50	20-40
	15-25	Unweathered bedrock			---	---	---	---	---
860: Laufer-----	0-3	Very cobbly loam	GC	A-6, A-2	0-10	25-45	60-75	50-65	45-60
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50
	7-10	Very cobbly clay loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	10-35	50-65	40-60	30-50
	10-15	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay	GC	A-2	0-10	20-50	35-55	25-50	20-40
	15-25	Unweathered bedrock			---	---	---	---	---
	0-3	Very cobbly loam	GC	A-6, A-2	0-10	25-45	60-75	50-65	45-60
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
860: Thiessen-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-3	Very cobbly loam							
	3-9	Very gravelly clay loam, very cobbly clay loam, very cobbly clay	GC	A-6, A-2	5-15	25-35	50-65	45-60	40-55
			GC	A-6, A-2	0-10	5-45	50-65	45-60	35-50
	9-22	Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay	GC	A-2	0-10	25-65	25-55	15-50	10-40
862: Millhouse-----	22-32	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly ashly loam	GC-GM, GC	A-4, A-2	0-5	30-45	50-70	45-60	35-55
	4-14	Very gravelly ashly loam, very gravelly ashly sandy loam, extremely gravelly ashly loam	GC-GM, GC	A-2, A-4	0-5	0-35	35-65	30-55	20-50
	14-28	Extremely gravelly sandy clay loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2	0-5	10-40	25-55	20-45	10-40
	28-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GP-GM, GP	A-1	0-5	25-50	15-50	10-35	5-30
864: Reelow-----	0-3	Very cobbly ashly loam	GC	A-2	0-5	30-45	50-70	45-60	35-55
	3-6	Ashy clay loam, ashly loam, gravelly ashly clay loam	CL, SC	A-6, A-7	0	0-10	70-100	65-90	50-85
	6-14	Gravelly clay	SC, GC	A-7	0-5	0-15	60-85	55-75	45-70
	14-18	Cemented material			---	---	---	---	---
	18-56	Cemented material			---	---	---	---	---
	56-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Fragments inches	4		
							10	10	40
868: Reelow-----	In					Pct	Pct		
	0-2	Very cobbly ashy loam	GC						
	2-6	Ashy clay loam, ashy loam, gravelly ashy clay loam	CL, SC	A-2 A-6, A-7	0	15-40 0	45-70 170-100	40-60 65-90	30-55 50-85
	6-14	Gravelly clay	SC, GC	A-7	0-5	0-15	60-85	55-75	45-70
	14-18	Cemented material			---	---	---	---	---
	18-56	Cemented material			---	---	---	---	---
	56-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
Reeser-----	0-6	Ashy clay loam	CL	A-6, A-7	0	0	100	100	80-10
	6-13	Ashy clay loam, ashy loam	CL	A-6, A-7	0	0	100	85-100	70-10
	13-22	Clay, cobbly clay loam, gravelly clay	CL, CH, SC	A-7	0	0-25	80-100	65-85	55-80
	22-26	Cemented material			---	---	---	---	---
	26-58	Cemented material			---	---	---	---	---
	58-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
Lablue-----	0-2	Very gravelly ashy loam	GC	A-6, A-4	0-5	10-25	55-70	50-60	45-60
	2-5	Ashy clay loam	CL	A-6, A-7	0	0-5	85-100	75-95	65-90
	5-8	Gravelly clay, clay loam, gravelly clay loam	CL, GC, SC	A-7	0-5	0-15	70-100	60-90	50-80
	8-11	Cemented material			---	---	---	---	---
	11-37	Cemented material			---	---	---	---	---
	37-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-10	5-25	30-45	20-35	15-25

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
869: Weirman, very gravelly sandy loam-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-5	Very gravelly sandy loam	GM, GP-GM	A-1	0-5	0-5	40-60	30-50	15-35
	5-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
Weirman, very cobbly sandy loam-----	0-4	Very cobbly sandy loam	GM, SM	A-1	10-20	20-25	50-65	40-55	15-30
	4-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
870: Millhouse-----	0-4	Ashy loam	CL-ML, CL	A-4	0	0-5	85-100	80-90	70-85
	4-14	Very gravelly ash loam, very gravelly ash sandy loam, extremely gravelly ash loam	GC-GM, GC	A-2, A-4	0-5	0-35	35-65	30-55	20-50
	14-28	Extremely gravelly sandy clay loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2	0-5	10-40	25-55	20-45	10-40
	28-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GP-GM, GP	A-1	0-5	25-50	15-50	10-35	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10	4	10	40
870: Metser-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-9	Clay loam	CL	A-6	0	0	100	95-100	90-100
	9-15	Clay	CH	A-7	0	0	100	95-100	90-100
	15-30	Clay	CH	A-7	0	0-5	100	85-100	75-95
	30-37	Very gravelly sandy clay, very gravelly clay	GC	A-2	0-10	10-25	45-60	35-50	25-40
	37-60	Extremely gravelly sandy clay, very gravelly sandy clay loam, extremely gravelly sandy clay loam	GC, GP-GC	A-2	0-15	10-30	25-55	15-45	10-35
871: Sketter-----	0-6	Cobbly ashy loam	CL-MI, CL	A-4	0	20-35	75-90	70-80	60-75
	6-10	Gravelly ashy loam, very gravelly ashy loam	GC, SC, CL	A-6, A-2, A-7	0	0-20	50-85	40-75	35-70
	10-21	Extremely cobbly sandy clay, very gravelly clay, very gravelly clay loam	GC, GP-GC	A-2	0-5	10-45	30-55	20-45	10-40
	21-24	Cemented material			---	---	---	---	---
	24-55	Cemented material			---	---	---	---	---
	55-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
Millhouse-----	0-4	Cobbly ashy loam	CL-MI, CL	A-4	0	20-30	75-90	70-80	60-75
	4-14	Very gravelly ashy loam, very gravelly ashy sandy loam, extremely gravelly ashy loam	GC-GM, GC	A-2, A-4	0-5	0-35	35-65	30-55	20-50
	14-28	Extremely gravelly sandy clay loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2	0-5	10-40	25-55	20-45	10-40
	28-60	Extremely gravelly loamy sand, extremely gravelly sand, extremely cobbly loamy sand	GP-GM, GP	A-1	0-5	25-50	15-50	10-35	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
871: Lablue-----	In				Pct	Pct			
	0-2	Very cobbly ashy loam	GC	A-6, A-4	0-5	30-45	55-70	50-60	45-60
	2-5	Ashy clay loam	CL	A-6, A-7	0	0-5	85-100	75-95	65-90
	5-8	Gravelly clay, clay loam, gravelly clay loam	CL, GC, SC	A-7	0-5	0-15	70-100	60-90	50-80
	8-11	Cemented material			---	---	---	---	---
	11-37	Cemented material			---	---	---	---	---
	37-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-10	5-25	30-45	20-35	15-25
872: Elkhights-----	0-8	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100
	8-19	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100
	19-41	Loam	CL	A-6	0	0	100	90-100	85-100
	41-56	Gravelly loam, loam, clay loam	CL	A-6	0	0-5	85-100	75-95	70-90
	56-60	Very gravelly sandy clay loam	GC	A-2	0-5	0-20	40-60	30-50	25-40
Swauk-----	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90
873: Lablue-----	0-2	Very cobbly ashy loam	GC	A-6, A-4	0-5	30-45	55-70	50-60	45-60
	2-5	Ashy clay loam	CL	A-6, A-7	0	0-5	85-100	75-95	65-90
	5-8	Gravelly clay, clay loam, gravelly clay loam	CL, GC, SC	A-7	0-5	0-15	70-100	60-90	50-80
	8-11	Cemented material			---	---	---	---	---
	11-37	Cemented material			---	---	---	---	---
	37-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-10	5-25	30-45	20-35	15-25

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	inches	4		
							10	10	40
873: Sketter-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-6	Cobbly ashy loam	CL-ML, CL	A-4	0	20-35	75-90	70-80	60-75
	6-10	Gravelly ashy loam, very gravelly ashy loam	GC, CL, SC	A-6, A-2, A-7	0	0-20	50-85	40-75	35-70
	10-21	Extremely cobbly sandy clay, very gravelly clay, very gravelly clay loam	GC, GP-GC	A-2	0-5	10-45	30-55	20-45	10-40
	21-24	Cemented material			---	---	---	---	---
	24-55	Cemented material			---	---	---	---	---
	55-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
	0-2	Very cobbly ashy loam	GC	A-2	0-5	30-45	50-70	45-60	35-55
	2-6	Ashy clay loam, ashy loam, gravelly ashy clay loam	CL, SC	A-6, A-7	0	0-10	70-100	65-90	50-85
	6-14	Gravelly clay	SC, GC	A-7	0-5	0-15	60-85	55-75	45-70
875: Reeser-----	14-18	Cemented material			---	---	---	---	---
	18-56	Cemented material			---	---	---	---	---
	56-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
	0-6	Ashy clay loam	CL	A-6, A-7	0	0	100	100	80-100
	6-13	Ashy clay loam, ashy loam	CL	A-6, A-7	0	0	100	85-100	70-100
	13-22	Clay, cobbly clay loam, gravelly clay	CL, CH, SC	A-7	0	0-25	80-100	65-85	55-80
	22-26	Cemented material			---	---	---	---	---
	26-58	Cemented material			---	---	---	---	---
	58-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
875: Sketter-----	In				Pct	Pct			
	0-6	Cobbly ashy loam	CL-ML, CL	A-4					
	6-10	Gravelly ashy loam, very gravelly ashy loam	GC, CL, SC	A-6, A-2, A-7	0	20-35	75-90	70-80	60-75
	10-21	Extremely cobbly sandy clay, very gravelly clay, very gravelly clay loam	GC, GP-GC	A-2	0-5	10-45	30-55	20-45	10-40
	21-24	Cemented material			---	---	---	---	---
	24-55	Cemented material			---	---	---	---	---
	55-60	Cemented extremely gravelly sandy loam, cemented very gravelly sandy loam	GM	A-1	0-15	5-15	40-60	30-50	25-30
Weirman-----	0-4	Very cobbly sandy loam	GM, GP-GM, SC-SM, SM	A-1	0-5	20-25	50-65	40-55	15-30
	4-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	140-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
877: Maxhill-----	0-7	Ashy loam	CL, CL-ML	A-4, A-6					
	7-13	Gravelly ashy loam, ashy loam	SC, CL, GC	A-6, A-2	0	0-5	185-100	80-90	70-85
	13-48	Very gravelly sandy clay, very cobbly sandy clay, extremely gravelly sandy clay	GC, SC	A-2	0-5	10-40	30-70	20-60	15-55
	48-60	Extremely gravelly loamy coarse sand, extremely cobbly loamy sand, extremely gravelly loamy sand	GW-GM, GM, GP	A-1	0-5	25-55	15-50	10-35	5-25

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	10	40
878: Nint-----	In					Pct			
	0-9	Gravelly ashly loam	SM, GM, ML	A-4, A-2	5-10	0-10	60-90	50-75	35-65
	9-13	Very gravelly clay loam	GC, SC	A-2, A-6	0-10	10-30	40-75	30-60	20-50
	13-19	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6, A-7	0-10	15-35	40-70	30-55	20-45
	19-38	Very gravelly clay loam, extremely gravelly clay loam, extremely cobbly clay loam	GC	A-2	0-10	15-55	35-65	25-50	15-40
	38-48	Unweathered bedrock			---	---	---	---	---
	0-60	Fragmental material			---	---	---	---	---
879: Patron, cobbly ashy silt loam	0-60	Unweathered bedrock			---	---	---	---	---
	0-12	Cobbly ashly silt loam	ML, SM, CL- ML, SC-SM	A-4	0	0-20	70-90	60-75	40-70
	12-35	Gravelly silty clay loam, gravelly clay loam	CL, SC	A-7	0	0-10	65-90	55-75	50-70
	35-60	Very gravelly clay loam, extremely gravelly clay, very cobbly clay	GC	A-2, A-7	0-10	10-30	35-60	25-50	20-45
	0-12	Gravelly ashly silt loam	ML, SM, CL- ML, SC-SM	A-4	0	0-10	70-90	60-75	40-70
	12-35	Gravelly silty clay loam, gravelly clay loam	CL, SC	A-7	0	0-10	65-90	55-75	50-70
	35-60	Very gravelly clay loam, extremely gravelly clay, very cobbly clay	GC	A-2, A-7	0-10	10-30	35-60	25-50	20-45
880: Elkhights-----	0-8	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100
	8-19	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100
	19-41	Loam	CL	A-6	0	0	100	90-100	85-100
	41-56	Gravelly loam, loam, clay loam	CL	A-6	0	0-5	85-100	75-95	70-90
	56-60	Very gravelly sandy clay loam	GC	A-2	0-5	0-20	40-60	30-50	25-40

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
880: Qualla-----	0-7	Loam	CL-ML, CL	A-4		0	0	100	90-100 85-100
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100 85-100
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6		0	0	100	90-100 85-100
	38-42	Clay loam	CL	A-7		0	0	90-100 90-100 85-100	
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7		0	0-5	90-100 90-100 85-100	
882: Weirman, very gravelly sandy loam-----	0-5	Very gravelly sandy loam	GM, GP-GM, SM	A-1		0-5	0-5	140-60	30-50 15-35
	5-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1		0-5	0-15	140-60	30-50 5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1		0-5	10-40	130-50	10-45 5-20
Weirman, very cobbly sandy loam-----	0-4	Very cobbly sandy loam	GM, SM	A-1		10-20	20-25	150-65	40-55 15-30
	4-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1		0-5	0-15	140-60	30-50 5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1		0-5	10-40	130-50	10-45 5-20
Kayak-----	0-6	Ashy sandy loam	SM	A-4		0-5	0-5	100	65-75
	6-17	Ashy loam, gravelly ash loam	CL, CL-ML, SC, SC-SM	A-4		0	0-5	175-100 65-90	155-80
	17-29	Ashy fine sandy loam, ashy sandy clay loam, gravelly ash loam	CL, SC, CL-ML, SC-SM	A-4, A-6		0	0-10	175-100 65-90	150-80
	29-39	Fine sandy loam, sandy clay loam, gravelly sandy loam	CL, SC-SM, SC, CL-ML	A-4, A-6		0	0-10	175-100 65-90	150-80
	39-60	Extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand	GP-GM, GP	A-1		0-10	10-30	130-50	20-40 15-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-			
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	
883: Nint-----	In				Pct	Pct				
	0-9	Gravelly ashly loam	SM, GM, ML	A-4, A-2	5-10	0-10	60-90	50-75	35-65	
	9-13	Very gravelly clay loam	GC, SC	A-2, A-6	0-10	10-30	40-75	30-60	20-50	
	13-19	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6, A-7	0-10	15-35	40-70	30-55	20-45	
	19-38	Very gravelly clay loam, GC extremely gravelly clay loam, extremely cobbly clay loam		A-2	0-10	15-55	35-65	25-50	15-40	
McDaniel-----	38-48	Unweathered bedrock			---	---	---	---	---	
	0-14	Gravelly ashly loam	SC-SM, GM	A-4, A-2	0-5	0-15	60-90	50-75	35-60	
	14-19	Gravelly ashly loam, very gravelly ashly loam	GC-GM, GC	A-4, A-2	0-5	0-30	60-80	50-75	35-60	
	19-24	Very cobbly clay loam, very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-6, A-2	0-10	10-35	50-75	40-60	30-45	
	24-32	Very cobbly clay loam, very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6	0-10	10-35	45-70	35-60	20-45	
Lauffer-----	32-60	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	20-60	30-70	20-60	15-45	
	0-3	Very cobbly loam	GC	A-6, A-2	0-10	25-45	60-75	50-65	45-60	
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50	
	7-10	Very cobbly clay loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	10-35	50-65	40-60	30-50	
	10-15	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay	GC	A-2	0-10	20-50	35-55	25-50	20-40	
	15-25	Unweathered bedrock			---	---	---	---	---	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	inches	3-10		
							4	10	40
884: Maxhill-----	In				Pct	Pct			
	0-7	Very cobbly ashy loam	GC, GC-GM	A-4, A-2, A-6	0-10	30-45	150-70	45-60	35-55
	7-13	Gravelly ashy loam, ashy loam	SC, CL, GC	A-6, A-2	0	0-5	160-100	55-90	45-85
	13-48	Very gravelly sandy clay, very cobbly sandy clay, extremely gravelly sandy clay	GC, SC	A-2	0-5	10-40	30-70	20-60	15-55
	48-60	Extremely gravelly loamy coarse sand, extremely cobbly loamy sand, extremely gravelly loamy sand	GW-GM, GP, GM	A-1	0-5	25-55	15-50	10-35	5-25
885: Palerf-----	0-9	Gravelly ashy loam	ML, CL-ML	A-4	0	5-10	180-90	70-85	65-80
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0-5	10-40	150-70	40-60	35-55
	27-35	Extremely gravelly clay, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-45	35-60	25-55	20-45
	35-45	Unweathered bedrock			---	---	---	---	---
	0-4	Ashy silt loam	ML	A-4	0	0-5	190-100	80-90	65-80
Ralock-----	4-14	Ashy silt loam, gravelly ash silt loam	ML	A-4	0	0-10	175-100	65-90	60-80
	14-27	Silt loam, gravelly clay loam, gravelly silt loam	CL	A-6	0	0-10	170-95	60-90	55-80
	27-36	Gravelly loam, gravelly silt loam, gravelly clay loam	SC	A-6, A-2	0-10	0-10	165-80	55-70	40-60
	36-60	Gravelly loam, very gravelly silt loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	0-20	150-65	40-60	35-50

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	inches	4	10	40
885: Vantage-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	150-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	150-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---
886: Camaspach-----	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	160-70	55-65
	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
	15-25	Unweathered bedrock			---	---	---	---	---
	0-60	Fragmental material			---	---	---	---	---
Rubble land----- Whiskeydick-----	0-4	Very cobbly loam	GC, GC-GM, SC-SM	A-4, A-2, A-6	0-10	30-45	60-75	150-65	40-55
	4-10	Very cobbly clay loam, very cobbly clay, very gravelly clay loam	GC	A-7	0-10	20-40	60-75	150-70	45-60
	10-27	Very cobbly clay, extremely cobbly clay, very gravelly clay	GC, SC	A-2, A-7	5-10	15-55	45-75	25-60	20-50
	27-37	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
887: Iainand-----	In				Pct	Pct			
	0-6	Ashy loam	CL-ML, ML	A-4	0	0	85-100	75-95	65-85
	6-12	Ashy loam, gravelly ash loam	CL-ML, SM	A-4	0	0-5	70-95	60-90	50-80
	12-20	Cobbly ash loam, very gravelly ash loam, very cobbly ash loam	SC-SM, GC-GM, SM, GM, ML	A-4, A-2	0-10	5-25	55-90	45-85	35-70
	20-41	Very cobbly clay loam, extremely cobbly clay loam, extremely gravelly clay loam	GC	A-6, A-2	0-10	15-55	35-70	25-65	20-55
	41-60	Very cobbly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2, A-6	0-10	15-55	35-70	25-65	20-55
Blint-----	0-4	Very cobbly ash loam	ML, CL-ML	A-4	0-5	15-25	70-90	60-80	50-75
	4-10	Very gravelly ash loam, very gravelly ash silt loam	GM, GC-GM	A-2	0-10	5-25	45-55	35-50	25-45
	10-18	Very gravelly loam, very gravelly silt loam	GC	A-2	0-10	5-35	45-55	35-50	25-45
	18-22	Extremely cobbly silt loam, extremely gravelly loam, very cobbly clay loam	GC	A-2, A-6	0-10	15-60	35-60	25-50	20-45
	22-32	Unweathered bedrock			0	0	---	---	---
	0-60	Fragmental material			---	---	---	---	---
889: Vantage-----	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	25-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10	4		
							10	10	40
889: Palerf-----	In				Pct	Pct			
	0-9	Gravelly ashly loam	ML, CL-ML	A-4	0	5-10	80-90	70-85	65-80
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0-5	10-40	50-70	40-60	35-55
	27-35	Extremely gravelly clay, GC very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-45	35-60	25-55	20-45
	35-45	Unweathered bedrock			---	---	---	---	---
Rubble land-----	0-60	Fragmental material			---	---	---	---	---
890: Camaspatch-----	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65
	4-9	Very gravelly clay loam, GC very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50
	9-15	Extremely cobbly clay, GC very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45
	15-25	Unweathered bedrock			---	---	---	---	---
Tankssel-----	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	85-100	75-90	55-85
	4-8	Ashy loam, ashly silt loam, gravelly ashly loam	CL, CL-ML	A-4	0-10	0-10	75-95	65-85	60-80
	8-17	Very gravelly ashly loam, GC gravelly ashly loam, gravelly ashly silt loam	GC, CL-ML, CL, GC-GM	A-4, A-2	0-10	0-10	55-85	45-75	40-70
	17-20	Very gravelly clay loam, GC very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	45-70	35-60	30-55
	20-28	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	30-60	20-50	15-45
Rubble land-----	28-38	Unweathered bedrock			---	---	---	---	---
	0-60	Fragmental material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments			Percentage pass- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	Pct	4	10	40
891: Tank sel	In					Pct	Pct			
	0-4	Ashy loam	CL, CL-ML	A-4	0-10	0-10	0-10	85-100	75-90	55-85
	4-8	Ashy loam, ash silt loam, gravelly ash loam	CL, CL-ML	A-4	0-10	0-10	0-10	75-95	65-85	60-80
	8-17	Very gravelly ash loam, gravelly ash loam, gravelly ash silt loam	GC, CL, CL- ML, GC-GM	A-4, A-2	0-10	0-10	0-10	55-85	45-75	40-70
	17-20	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2, A-7	0-10	10-40	45-70	35-60	30-55	30-55
	20-28	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly clay	GC	A-2	0-10	10-50	30-60	20-50	15-45	15-45
	28-38	Unweathered bedrock								
	0-60	Fragmental material								
	0-60	Unweathered bedrock								
892: Palerf	0-9	Gravelly ash loam	ML, CL-ML	A-4	0	5-10	80-90	70-85	65-80	65-80
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0-5	10-40	50-70	40-60	35-55	35-55
	27-35	Extremely gravelly clay, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-45	35-60	25-55	20-45	20-45
	35-45	Unweathered bedrock								
	0-60	Fragmental material								
	0-60	Unweathered bedrock								
893: Rubble land	0-60	Fragmental material								
	0-4	Very cobbly loam	SC	A-4, A-6	0-10	25-50	70-80	60-70	55-65	55-65
	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50	25-50
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7	0	25-55	30-60	20-55	15-45	15-45
	15-25	Unweathered bedrock								

Table 8.--Engineering Properties---Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
893: Rock outcrop----	In				Pct	Pct			
	0-60	Unweathered bedrock							
					---	---	---	---	---
894: Vantage-----	0-5	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	150-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6	0-10	15-40	60-75	150-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-15	25-50	35-60	125-55	20-50
	18-28	Unweathered bedrock			---	---	---	---	---
Clerf-----	0-9	Very cobbly clay loam	GC	A-6	0-10	30-45	60-80	150-70	40-65
	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2	0-5	10-40	50-75	140-65	30-60
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7	0-10	20-45	35-70	125-60	20-50
	24-34	Unweathered bedrock			---	---	---	---	---
Wipple-----	0-7	Cobbly clay loam	CL	A-6	0	25-40	80-100	70-100	65-100
	7-11	Very gravelly clay loam, very cobbly clay loam	GC	A-6, A-2	0-10	5-15	50-65	140-55	35-50
	11-30	Very gravelly clay, very cobbly clay, extremely cobbly clay	GC	A-7, A-2	0-10	5-45	45-70	135-60	25-60
	30-50	Very cobbly clay loam, very cobbly clay, extremely cobbly clay loam	GC	A-7, A-2	0-10	15-45	45-70	135-60	30-60
	50-60	Unweathered bedrock			---	---	---	---	---
896: Argabak-----	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	140-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	120-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
896: Camaspatch-----	In				Pct	Pct			
	0-4	Very cobbly loam	SC						
	4-9	Very gravelly clay loam, GC		A-4, A-6	0-10	25-50	70-80	60-70	55-65
		very cobbly clay loam	GC	A-2, A-7	0-10	10-35	50-65	40-60	25-50
	9-15	Extremely cobbly clay, GC		A-2, A-7	0	25-55	30-60	20-55	15-45
897: Nanum, flooded--		very cobbly clay, extremely gravelly clay							
	15-25	Unweathered bedrock			---	---	---	---	---
	0-8	Ashy loam	CL	A-6					
	8-15	Ashy loam, ashy clay loam	CL	A-6	0	0	100	95-100	90-100
898: Shinn-----	15-28	Ashy clay loam	CL, SC	A-6	0	0-5	90-100	80-100	65-95
	28-35	Very gravelly clay loam, GC		A-2	0-10	0-15	45-60	35-50	25-40
		very gravelly sandy clay loam							
	35-60	Extremely gravelly sandy clay loam, very gravelly sandy clay loam, very gravelly sandy clay loam, extremely gravelly clay loam	GC, GP-GC	A-2	0-15	10-15	25-55	15-45	5-35
899: Laufer-----	0-2	Very cobbly ashy loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-5	25-35	50-70	40-55	30-45
	2-6	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	6-9	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	15-75	35-60	25-50	20-45
	9-18	Unweathered bedrock			---	---	---	---	---
900: Laufer-----	0-3	Very cobbly loam	GC	A-6, A-2	0-10	25-45	60-75	50-65	45-60
	3-7	Very gravelly clay loam	GC	A-2, A-6, A-7	0-5	0-15	50-65	40-60	30-50
	7-10	Very cobbly clay loam, very gravelly clay loam	GC	A-2, A-6, A-7	0-10	10-35	50-65	40-60	30-50
	10-15	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay	GC	A-2	0-10	20-50	35-55	25-50	20-40
	15-25	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-		
			Unified	AASHTO	inches	inches	4		
							10	10	40
898: Nint-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-9	Gravelly ashly loam	SM, GM, ML	A-4, A-2	5-10	0-10	60-90	50-75	35-65
	9-13	Very gravelly clay loam	GC, SC	A-2, A-6	0-10	10-30	40-75	30-60	20-50
	13-19	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6, A-7	0-10	15-35	40-70	30-55	20-45
	19-38	Very gravelly clay loam, extremely gravelly clay loam, extremely cobbly clay loam	GC	A-2	0-10	15-55	35-65	25-50	15-40
899: Bedron-----	38-48	Unweathered bedrock			---	---	---	---	---
	0-13	Ashly loam	ML	A-4	0-5	0-5	85-100	75-95	70-90
	13-19	Clay loam, gravelly clay loam	CH, CL	A-7	0-5	0-5	80-100	70-95	65-90
	19-27	Clay loam, gravelly clay loam, very gravelly clay loam	SC, CH, CL, GC	A-7	0-5	0-25	50-95	40-85	30-75
	27-60	Very gravelly clay loam, gravelly clay loam	GC, SC	A-7, A-2	0-5	0-30	50-85	40-75	30-65
Nint-----	0-9	Gravelly ashly loam	SM, GM, ML	A-4, A-2	5-10	0-10	60-90	50-75	35-65
	9-13	Very gravelly clay loam	GC, SC	A-2, A-6	0-10	10-30	40-75	30-60	20-50
	13-19	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6, A-7	0-10	15-35	40-70	30-55	20-45
	19-38	Very gravelly clay loam, extremely gravelly clay loam, extremely cobbly clay loam	GC	A-2	0-10	15-55	35-65	25-50	15-40
	38-48	Unweathered bedrock			---	---	---	---	---
900: Deedale, flooded	0-12	Clay loam	CL	A-6	0	0	100	95-100	90-100
	12-25	Clay	CH	A-7	0	0	95-100	85-100	80-100
	25-31	Clay	CH	A-7	0	0	95-100	85-100	80-100
	31-54	Clay	CH	A-7	0	0-5	90-100	80-100	70-95
	54-60	Extremely gravelly sandy clay loam, very gravelly sandy clay loam	GC	A-2	0-15	10-30	25-55	15-45	5-35

Table 8. --Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number					
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40			
901: Niben-----	In					Pct	Pct					
	0-4	Loam						0	0-5	80-100	75-90	70-85
	4-18	Clay loam						0	0-5	85-100	75-95	70-90
	18-26	Clay, clay loam						0	0-15	90-100	85-95	80-90
	26-51	Clay, clay loam						0	0	90-100	85-95	80-90
	51-60	Clay loam, clay, gravelly clay loam						0	0-15	70-100	65-95	55-90
Vantage-----	0-5	Very cobbly loam	GC, SC	A-6				0-10	25-45	60-75	50-65	45-60
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6				0-10	15-40	60-75	50-65	45-60
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay										
Benwy-----	0-10	Silt loam	ML, CL-ML	A-4				0	0	95-100	90-100	80-90
	10-18	Silt loam, loam	ML	A-4				0	0	90-100	85-100	75-90
	18-33	Gravelly silt loam, gravelly loam, clay loam	CL, CL-ML	A-4, A-6				0	0	75-100	70-95	60-85
	33-45	Gravelly silt loam, loam, gravelly clay loam	CL, CL-ML	A-4, A-6				0	0-10	70-95	65-90	55-80
902: Patron-----	0-12	Gravelly ash silt loam	ML, SM, CL- ML, SC-SM	A-4				0	0-10	70-90	60-75	40-70
	12-35	Gravelly silty clay loam, gravelly clay loam	CL, SC	A-7				0	0-10	65-90	55-75	50-70
	35-60	Very gravelly clay loam, extremely gravelly clay, very cobbly clay	GC	A-2, A-7				0-10	10-30	35-60	25-50	20-45
Camaspach-----	0-4	Very cobbly loam	SC	A-4, A-6				0-10	25-50	70-80	60-70	55-65
	4-9	Very gravelly clay loam, very cobbly clay loam	GC	A-2, A-7				0-10	10-35	50-65	40-60	25-50
	9-15	Extremely cobbly clay, very cobbly clay, extremely gravelly clay	GC	A-2, A-7				0	25-55	30-60	20-55	15-45
	15-25	Unweathered bedrock						---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
903: Marlic-----	In				Pct	Pct			
	0-6	Loam	CL-ML, CL	A-4		0	0-5	85-100	80-95
	6-15	Clay loam	CL	A-6		0	0-5	85-100	80-95
	15-18	Gravelly clay loam, clay loam	CL	A-7		0	0-15	65-95	60-90
Zen-----	18-28	Unweathered bedrock			---	---	---	---	---
	0-7	Silt loam	CL-ML, CL	A-4		0	0	95-100	90-100
	7-12	Silt loam	CL-ML	A-4		0	0	95-100	90-100
	12-27	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6		0	0	95-100	90-100
Laric-----	27-30	Gravelly clay loam, loam, silt loam, gravelly loam	SC, CL, SC-SM	A-4, A-6		0	0-10	70-100	65-95
	30-40	Unweathered bedrock			---	---	---	---	---
	0-3	Very gravelly loam	GC-GM, GM	A-2, A-1, A-4		0-5	0-15	40-60	30-50
	3-9	Gravelly clay loam, gravelly loam	CL	A-6		0	0-15	70-85	60-75
905: Vantage-----	9-19	Unweathered bedrock			---	---	---	---	---
	0-5	Very cobbly loam	GC, SC	A-6		0-10	25-45	60-75	50-65
	5-8	Very cobbly clay loam, very gravelly clay loam, very gravelly loam	GC	A-6		0-10	15-40	60-75	50-65
	8-18	Very cobbly clay, extremely cobbly clay, extremely gravelly clay			---	---	---	---	---
Niben-----	18-28	Unweathered bedrock			---	---	---	---	---
	0-4	Loam	CL, CL-ML	A-4, A-6		0	0-5	80-100	75-90
	4-18	Clay loam	CL	A-6		0	0-5	85-100	75-95
	18-26	Clay, clay loam	CL	A-7		0	0-15	90-100	85-95
Clerf-----	26-51	Clay, clay loam	CL	A-7		0	0	90-100	85-95
	51-60	Clay loam, clay, gravelly clay loam	CL	A-7		0	0-15	70-100	65-95
	0-9	Very cobbly clay loam	GC	A-6		0-10	30-45	60-80	50-70
	9-12	Very cobbly clay, very gravelly clay	GC	A-7, A-2		0-5	10-40	50-75	40-65
	12-24	Very cobbly clay, extremely cobbly clay, extremely gravelly clay	GC	A-2, A-7		0-10	20-45	35-70	25-60
	24-34	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4		
							10	10	40
906: Levnik-----	In				Pct	Pct			
	0-4	Very gravelly loam	GC, GC-GM	A-2		0	0-10	145-60	40-50
	4-8	Clay loam	CL	A-6		0	0-5	180-100	75-90
	8-13	Gravelly clay, gravelly clay loam, clay loam	CL, GC, SC	A-7		0	0-5	165-95	60-85
	13-16	Extremely gravelly clay, very gravelly clay, very cobbly clay	GC, GP-GC	A-2, A-7		0-5	15-45	25-70	20-60
	16-26	Unweathered bedrock				---	---	---	---
Nosser-----	0-3	Gravelly loam	SC, CL, GC-GM	A-4		0	0-5	160-90	55-75
	3-10	Clay loam	CL	A-6, A-7		0	0-5	195-100	75-95
	10-18	Gravelly clay loam, clay loam	CL	A-6, A-7		0	0-15	170-95	65-85
	18-22	Extremely gravelly clay loam, very gravelly clay loam, very cobbly clay loam	GC, GP-GC	A-2, A-7		0-5	15-40	25-70	20-60
	22-32	Unweathered bedrock				---	---	---	---
Nevo-----	0-2	Very cobbly loam	GM, GC-GM	A-4		0-5	35-40	165-75	55-65
	2-8	Very gravelly clay loam, very cobbly loam, extremely gravelly loam	GC	A-2, A-6		0-5	10-45	35-65	25-55
	8-18	Unweathered bedrock				---	---	---	---
910: Winchester-----	0-9	Sand	SM	A-1, A-2		0	0-5	185-100	75-100
	9-15	Coarse sand, sand, loamy coarse sand	SM	A-1, A-2, A-3		0	0-5	185-100	75-100
	15-60	Coarse sand, sand	SP-SM, SP	A-1, A-2, A-3		0	0-5	185-100	75-100
Sagehill-----	0-6	Fine sandy loam	ML, SM	A-4		0	0-5	195-100	95-100
	6-28	Fine sandy loam, very fine sandy loam, silt loam	ML, SM	A-4		0	0-10	190-100	85-100
	28-45	Fine sandy loam, very fine sandy loam, silt loam	ML, SM	A-4		0	0-10	190-100	85-100
	45-60	Fine sandy loam, gravelly fine sandy loam, very fine sandy loam	SM, ML	A-4, A-2		0	0-10	175-100	70-90

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
910: Burbank-----	In				Pct	Pct			
	0-5	Very cobbly loamy sand	GM, SM	A-1, A-2	0-5	5-35	45-70	35-60	20-50
	5-17	Very cobbly loamy sand, very gravelly loamy fine sand	GM	A-1	0-5	10-30	45-60	35-50	20-40
	17-60	Very gravelly sand, very cobbly coarse sand, very cobbly loamy sand	GP-GM, GM, GP	A-1	0-10	10-40	20-55	10-50	5-30
911: Sagehill-----	0-6	Fine sandy loam	ML, SM	A-4	0	0-5	95-100	95-100	90-95
	6-28	Fine sandy loam, very fine sandy loam, silt loam	ML, SM	A-4	0	0-10	90-100	85-100	70-95
	28-45	Fine sandy loam, very fine sandy loam, silt loam	ML, SM	A-4	0	0-10	90-100	85-100	70-95
	45-60	Fine sandy loam, gravelly fine sandy loam, very fine sandy loam	SM, ML	A-4, A-2	0	0-10	75-100	70-90	60-85
	0-5	Very cobbly loamy sand	GM, SM	A-1, A-2	0-5	5-35	45-70	35-60	20-50
	5-17	Very cobbly loamy sand, very gravelly loamy fine sand	GM	A-1	0-5	10-30	45-60	35-50	20-40
Burbank-----	17-60	Very gravelly sand, very cobbly coarse sand, very cobbly loamy sand	GP-GM, GM, GP	A-1	0-10	10-40	20-55	10-50	5-30
	0-4	Gravelly sandy loam	SM, GM	A-4, A-2	0	0-5	60-85	50-75	40-65
	4-9	Gravelly sandy loam, gravelly fine sandy loam, gravelly loam	SM	A-4, A-2	0	0-10	75-85	55-75	45-60
	9-12	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	40-60	30-55	20-40
Malaga-----	12-19	Extremely gravelly sandy loam	GM	A-1	0-10	5-25	30-45	20-35	15-25
	19-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very cobbly sand	GP-GM, GP, SP, SP-SM	A-1	0-10	10-35	25-60	15-55	10-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
914: Disage-----	In				Pct	Pct			
	0-4	Very cobbly loam	GC, SC	A-6	0-10	25-45	60-75	50-65	40-55
	4-9	Very gravelly clay loam, GM		A-2, A-7	0-10	5-40	50-70	40-60	30-50
	9-18	Very cobbly clay loam, GC		A-2, A-7	0-10	20-60	35-60	25-55	15-45
Clenage-----		very cobbly clay, extremely cobbly clay loam							
	18-28	Unweathered bedrock			---	---	---	---	---
	0-3	Very gravelly loam	GC, SC	A-2, A-6	0-5	15-25	50-75	40-55	30-45
	3-16	Very gravelly clay loam, gravelly clay loam	SC, GC	A-6, A-2, A-7	0-5	0-25	55-85	45-75	35-65
915: Nosser-----	16-25	Very gravelly clay, extremely gravelly clay, extremely cobbly clay	GC	A-2, A-7	0-15	10-60	35-60	25-55	15-45
	25-35	Unweathered bedrock			---	---	---	---	---
	0-3	Gravelly loam	SC, CL, GC-GM	A-4	0	0-5	60-90	55-75	45-65
	3-10	Clay loam	CL	A-6, A-7	0	0-5	95-100	75-95	70-90
Levnik-----	10-18	Gravelly clay loam, clay loam	CL	A-6, A-7	0	0-15	70-95	65-85	60-80
	18-22	Extremely gravelly clay loam, very gravelly clay loam, very cobbly clay loam	GC, GP-GC	A-2, A-7	0-5	15-40	25-70	20-60	10-50
	22-32	Unweathered bedrock			---	---	---	---	---
	0-4	Very gravelly loam	GC, GC-GM	A-2	0	0-10	45-60	40-50	30-40
916: Levnik-----	4-8	Clay loam	CL	A-6	0	0-5	80-100	75-90	65-85
	8-13	Gravelly clay, gravelly clay loam, clay loam	CL, GC, SC	A-7	0	0-5	65-95	60-85	50-75
	13-16	Extremely gravelly clay, very gravelly clay, very cobbly clay	GC, GP-GC	A-2, A-7	0-5	15-45	25-70	20-60	10-50
	16-26	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	inches	3-10			
							4	10	40
916: Nosser-----	In				Pct	Pct			
	0-3	Gravelly loam	SC, CL, GC-GM	A-4		0	0-5	60-90	55-75
	3-10	Clay loam	CL	A-6, A-7		0	0-5	95-100	75-95
	10-18	Gravelly clay loam, clay loam	CL	A-6, A-7		0	0-15	70-95	65-85
	18-22	Extremely gravelly clay loam, very gravelly clay loam, very cobbly clay loam	GC, GP-GC	A-2, A-7		0-5	15-40	25-70	20-60
	22-32	Unweathered bedrock				---	---	---	---
Levnik-----	0-4	Very gravelly loam	GC, GC-GM	A-2		0	0-10	45-60	40-50
	4-8	Clay loam	CL	A-6		0	0-5	80-100	75-90
	8-13	Gravelly clay, gravelly clay loam, clay loam	CL, GC, SC	A-7		0	0-5	65-95	60-85
	13-16	Extremely gravelly clay, very gravelly clay, very cobbly clay	GC, GP-GC	A-2, A-7		0-5	15-45	25-70	20-60
	16-26	Unweathered bedrock				---	---	---	---
917: Nevo-----	0-2	Extremely gravelly sandy loam	GM	A-1		0	15-30	30-45	20-35
	2-8	Very gravelly clay loam, very cobbly loam, extremely gravelly loam	GC	A-2, A-6		0-5	10-45	35-65	25-55
	8-18	Unweathered bedrock				---	---	---	---
920: Esquatzel-----	0-10	Silt loam	ML, CL-ML	A-4		0	0	100	100
	10-40	Silt loam, very fine sandy loam	ML, CL-ML	A-4		0	0	100	100
	40-60	Stratified fine sandy loam to silt loam	ML, CL-ML	A-4		0	0	100	100
Aguolls-----	0-5	Cobbly fine sandy loam	ML, SM	A-4		0-5	20-30	80-95	70-85
	5-12	Gravelly sandy loam, very cobbly loam, very gravelly sandy loam	GM, ML, SM	A-2, A-1, A-4		0-5	0-40	45-85	40-75
	12-18	Extremely gravelly sandy loam, very gravelly sandy loam, gravelly loam	GM, ML, SM	A-2, A-1, A-4		0-5	0-40	35-85	30-75
	18-60	Extremely gravelly loamy sand, extremely gravelly sand, very gravelly loamy sand	GP-GM, GP	A-1		0-5	0-40	20-50	10-45

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
920: Weirman-----	In				Pct	Pct			
	0-4	Very cobbly sandy loam	GM, SM	A-1					
	4-15	Very gravelly loamy sand	GP, GP-GM,	A-1	0-5	20-25	50-65	40-55	15-30
			SP, SP-SM		0-5	0-15	40-60	30-50	5-25
921: Fortyday-----	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
	0-3	Cobbly loam	CL-ML, CL	A-4					
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-30	70-95	60-80	55-75
	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	10-35	50-65	40-60	35-55
Nevo-----	15-25	Unweathered bedrock							
	0-2	Very cobbly loam	GM, GC-GM	A-4					
	2-8	Very gravelly clay loam, very cobbly loam, extremely gravelly loam	GC	A-2, A-6	0-5	35-40	65-75	55-65	45-55
	8-18	Unweathered bedrock							
Rock outcrop----	0-60	Unweathered bedrock							
922: Drino-----	0-3	Very gravelly loam	GC-GM, GM, SC-SM, SM	A-2, A-4	10-25	20-30	50-70	40-60	35-55
	3-7	Very gravelly loam, very cobbly loam	GC-GM, GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
	7-19	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-40	50-55	40-55	35-45
	19-38	Extremely cobbly loam, very gravelly loam, extremely gravelly loam	GC, GC-GM	A-2, A-1	0-10	15-65	35-60	25-50	20-40
38-48		Unweathered bedrock							

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number-					
			Unified	AASHTO	inches	3-10 inches	4			10	40	
							Pct	Pct				
922: Fortyday-----	In											
	0-3	Cobbly loam	CL-ML, CL	A-4								
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-30	70-95	60-80	55-75			
	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45			
	15-25	Unweathered bedrock			---	---	---	---	---			
923: Timmerman-----	0-3	Sandy loam	SM	A-4								
	3-15	Sandy loam, coarse sandy loam, fine sandy loam	SM	A-4, A-2	0	0	100	100	70-80			
	15-60	Loamy coarse sand, coarse sand, gravelly coarse sand	SW-SM, SM, SP-SM	A-1	0	0-15	85-100	60-95	10-40			
	0-6	Fine sandy loam	ML, SM	A-4	0	0-5	95-100	95-100	90-95			
	6-28	Fine sandy loam, very fine sandy loam, silt loam	ML, SM	A-4	0	0-10	90-100	85-100	70-95			
Sagehill-----	28-45	Fine sandy loam, very fine sandy loam, silt loam	ML, SM	A-4	0	0-10	90-100	85-100	70-95			
	45-60	Fine sandy loam, gravelly fine sandy loam, very fine sandy loam	SM, ML	A-4, A-2	0	0-10	75-100	70-90	60-85			
	0-4	Stony sandy loam	SM	A-4, A-2	5-15	5-20	80-95	75-90	65-80			
	4-9	Gravelly sandy loam, gravelly fine sandy loam, gravelly loam	SM	A-4, A-2	0	0-10	75-85	55-75	45-60			
	9-12	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	40-60	30-55	20-40			
924: Malaga, stony sandy loam-----	12-19	Extremely gravelly sandy loam	GM	A-1	0-10	5-25	30-45	20-35	15-25			
	19-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very cobbly sand	GP-GM, GP, SP, SP-SM	A-1	0-10	10-35	25-60	15-55	10-30			

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-- sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
927: Disage-----	In				Pct	Pct			
	0-4	Very cobbly loam	GC, SC						
	4-9	Very gravelly clay loam, very cobbly clay loam	GM	A-6 A-2, A-7	0-10 0-10	25-45 5-40	160-75 150-70	50-65 40-60	40-55 30-50
	9-18	Very cobbly clay loam, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-60	35-60	25-55	15-45
	18-28	Unweathered bedrock			---	---	---	---	---
Sohappy-----	0-4	Silt loam	ML	A-4	0	0	100	100	90-100
	4-32	Silt loam, loam	ML	A-4	0	0	95-100	90-100	85-100
	32-43	Gravelly silt loam, cobbly silt loam, cobbly loam	CL-ML, ML	A-4	0	10-20	75-90	70-85	50-75
	43-51	Very cobbly loam, extremely gravelly loam, extremely cobbly clay loam	GC	A-2, A-1	0-10	20-45	30-60	25-55	20-45
	51-60	Unweathered bedrock			---	---	---	---	---
Clenage-----	0-3	Very gravelly loam	GC, SC	A-2, A-6	0-5	15-25	50-75	40-55	30-45
	3-16	Very gravelly clay loam, gravelly clay loam	SC, GC	A-6, A-2, A-7	0-5	0-25	55-85	45-75	35-65
	16-25	Very gravelly clay, extremely gravelly clay, extremely cobbly clay	GC	A-2, A-7	0-15	10-60	35-60	25-55	15-45
	25-35	Unweathered bedrock			---	---	---	---	---
928: Mozen-----	0-5	Ashy silt loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	5-13	Ashy silt loam, ashy loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	13-22	Clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	22-28	Loam, clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	28-39	Loam, clay loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-5	85-95	60-90	55-85
Argabak-----	39-49	Unweathered bedrock			---	---	---	---	---
	0-2	Very cobbly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-10	20-35	50-70	40-55	30-45
	2-6	Extremely gravelly loam, very gravelly clay loam, very cobbly loam	GC	A-2, A-6	0-10	15-40	30-60	20-50	15-45
	6-16	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
928: Yrtneg-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-7	Ashy loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	7-10	Ashy loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	10-16	Clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	16-19	Clay loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-10	85-95	60-90	55-85
929: Neviot-----	19-29	Unweathered bedrock			---	---	---	---	---
	0-6	Gravelly ashy loam	CL-ML, GC-GM, ML, SM	A-4	5-10	5-25	60-95	55-85	45-80
	6-12	Gravelly ashy loam	CL-ML, ML, SM, SC-SM	A-4, A-2	0-5	0-10	55-95	50-85	40-80
	12-22	Very gravelly loam, very cobbly loam	GC, GC-GM	A-4, A-2, A-6	0-10	10-35	40-70	35-60	25-55
	22-40	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4, A-6	0-10	10-35	40-70	35-60	25-55
	40-49	Very gravelly loam, very cobbly loam, extremely gravelly loam, extremely cobbly loam	GC, GC-GM	A-2, A-4, A-6	0-15	10-45	35-70	30-60	20-55
	49-60	Very gravelly loam, extremely gravelly loam, extremely cobbly loam	GC-GM, GC	A-2	0-15	10-50	35-60	30-50	20-45
	0-9	Gravelly ashy loam	ML, CL-ML	A-4	0	5-10	80-90	70-85	65-80
	9-27	Very gravelly clay, very cobbly clay loam, very gravelly clay loam	GC	A-7, A-2	0-5	10-40	50-70	40-60	35-55
	27-35	Extremely gravelly clay, very cobbly clay, extremely cobbly clay loam	GC	A-2, A-7	0-10	20-45	35-60	25-55	20-45
Rubble land-----	35-45	Unweathered bedrock			---	---	---	---	---
	0-60	Fragmental material			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	Pct	4		
							10	40	
932: Volinger-----	In				Pct	Pct			
	0-5	Ashy silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100
	5-17	Ashy silt loam, ashy loam	CL-ML, ML	A-4	0	0	100	95-100	90-100
	17-39	Silty clay loam, clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	39-50	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100
	50-58	Silt loam, loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	90-100
	58-60	Silt loam, loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	90-100
Mozen-----	0-5	Ashy silt loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	5-13	Ashy silt loam, ashy loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	13-22	Clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	22-28	Loam, clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	28-39	Loam, clay loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-5	85-95	60-90	55-85
	39-49	Unweathered bedrock			---	---	---	---	---
933: Mozen-----	0-5	Ashy silt loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	5-13	Ashy silt loam, ashy loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	13-22	Clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	22-28	Loam, clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	28-39	Loam, clay loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-5	85-95	60-90	55-85
	39-49	Unweathered bedrock			---	---	---	---	---
Volinger-----	0-5	Ashy silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100
	5-17	Ashy silt loam, ashy loam	CL-ML, ML	A-4	0	0	100	95-100	90-100
	17-39	Silty clay loam, clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	39-50	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100
	50-58	Silt loam, loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	90-100
	58-60	Silt loam, loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	90-100

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass-		
			Unified	AASHTO	inches	3-10	sieve number-		
							4	10	40
933: Yrtneg-----	In				Pct	Pct			
	0-7	Ashy loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	7-10	Ashy loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95
	10-16	Clay loam	CL	A-6, A-7	0	0-5	85-100	75-90	70-85
	16-19	Clay loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-10	85-95	60-90	55-85
936: Shushuskin-----	19-29	Unweathered bedrock			---	---	---	---	---
	0-4	Ashy loam	ML	A-4	0	0	100	95-100	90-100
	4-8	Ashy loam, ashly silt loam	ML	A-4	0	0	100	95-100	90-100
	8-13	Ashy loam, ashly silt loam	ML	A-4	0	0	100	95-100	90-95
	13-19	Loam, silt loam, clay loam	CL	A-6, A-7	0	0	90-100	80-95	70-90
	19-23	Clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	80-95	70-90
	23-32	Very gravelly clay loam, clay loam, gravelly clay loam	SC, CL	A-6, A-2, A-7	0	15-35	55-95	45-90	35-85
	32-42	Unweathered bedrock			---	---	---	---	---
	0-8	Ashy loam	ML	A-4	0	0	100	95-100	90-100
	8-18	Ashy loam, ashly silt loam	ML	A-4	0	0	100	95-100	90-100
Pachneum-----	18-26	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	26-33	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	33-47	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	47-60	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100
	0-2	Very cobbly ashly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0-5	25-35	50-70	40-55	30-45
	2-6	Extremely cobbly clay loam, very gravelly clay loam, extremely gravelly loam	GC	A-2, A-6	0-10	15-45	35-60	25-50	20-45
	6-9	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	15-75	35-60	25-50	20-45
Shinn-----	9-18	Unweathered bedrock			---	---	---	---	---

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass- sieve number--			
			Unified	AASHTO	inches	3-10 inches				
							4	10	40	
940: Renslow-----	In				Pct	Pct				
	0-11	Silt loam	ML	A-4	0	0	100	95-100	95-100	
	11-22	Silt loam	ML	A-4	0	0	100	95-100	95-100	
	22-36	Silt loam	CL-ML	A-4	0	0	100	95-100	95-100	
941: Renslow-----	36-60	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	95-100	
	0-11	Silt loam	ML	A-4	0	0	100	95-100	95-100	
	11-22	Silt loam	ML	A-4	0	0	100	95-100	95-100	
	22-36	Silt loam	CL-ML	A-4	0	0	100	95-100	95-100	
944: Rubble land-----	36-60	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	95-100	
	0-60	Fragmental material			---	---	---	---	---	
Fortyday-----	0-3	Very stony loam	GC-GM, SC-SM	A-4, A-2	10-25	20-25	50-75	45-70	40-65	
	3-6	Very gravelly loam, very cobbly loam	GC, GC-GM	A-2, A-4	0-10	10-35	150-65	40-60	35-55	
	6-15	Extremely cobbly loam, extremely gravelly clay loam, very gravelly loam	GC	A-2, A-6	0-10	15-45	135-60	25-50	20-45	
	15-25	Unweathered bedrock			---	---	---	---	---	
Rock outcrop-----	0-60	Unweathered bedrock			---	---	---	---	---	

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
948: Hardmauk-----	In				Pct	Pct			
	0-1	Slightly decomposed plant material	PT		0	0	100	100	60-10
	1-5	Ashy loam	ML, CL-ML, SC-SM, SM	A-4	0-5	0-5	80-95	75-95	65-85
	5-11	Loam, gravelly loam, gravelly sandy loam	ML, CL-ML, SC-SM, SM	A-4, A-2	0-5	0-5	65-95	60-95	50-85
	11-20	Loam, gravelly loam, gravelly sandy loam	ML, CL-ML, SC-SM, SM	A-4, A-2	0-5	0-5	65-95	60-95	50-85
	20-38	Gravelly clay loam, loam, gravelly sandy clay loam	CL, SC	A-6, A-2	0-5	0-15	65-95	60-95	50-85
	38-50	Gravelly sandy clay loam, very gravelly sandy clay, very gravelly sandy clay loam	SC, GC	A-6, A-2, A-7	0-5	5-25	55-85	50-75	40-70
	50-60	Very gravelly sandy clay loam, very gravelly sandy clay, extremely gravelly sandy clay loam	GC, SC	A-2	0-5	10-30	35-65	30-55	20-50
Teanaway-----	0-3	Moderately decomposed plant material	PT						
	3-7	Ashy loam	ML	A-4	0	0	100	100	60-10
	7-22	Loam, silt loam	ML	A-4	0	0	100	100	90-95
	22-42	Loam, clay loam, silt loam	CL	A-6	0	0	90-100	85-100	75-95
	42-51	Loam, clay loam, gravelly clay loam, gravelly loam	CL, SC	A-6	0	0	85-100	75-100	65-90
	51-60	Gravelly loam, clay loam, loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-10	75-100	65-100	55-90
954: EsquatzeI-----	0-10	Silt loam	ML, CL-ML	A-4	0	0	100	100	95-10
	10-40	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	100	85-10
	40-60	Stratified fine sandy loam to silt loam	ML, CL-ML	A-4	0	0	100	100	95-10

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches			
							4	10	40
955: Esquatzel-----	In				Pct	Pct			
	0-10	Silt loam	ML, CL-ML	A-4					
	10-40	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	100	95-100
	40-60	Stratified fine sandy loam to silt loam	ML, CL-ML	A-4	0	0	100	100	85-100
Weirman-----	0-5	Fine sandy loam	ML, CL-ML	A-4					
	5-15	Very gravelly loamy sand	GP, GP-GM,	A-1	0	0-5	90-100	85-95	65-85
			SP, SP-SM		0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
Weirman, very cobbly sandy loam-----	0-4	Very cobbly sandy loam	GM, GP-GM,	A-1					
			SC-SM, SM		0-5	20-25	50-65	40-55	15-30
	4-15	Very gravelly loamy sand	GP, GP-GM,	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	SP, SP-SM GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
957: Kayak, rarely flooded-----	0-6	Ashy loam	CL	A-4					
	6-17	Ashy loam, gravelly ash loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	90-100	80-100	65-95
	17-29	Ashy fine sandy loam, ashy sandy clay loam, gravelly ash sandy loam	CL, SC, CL- ML, SC-SM	A-4, A-6	0	0-10	75-100	65-90	55-80
	29-39	Fine sandy loam, sandy clay loam, gravelly sandy loam	CL, SC, CL- ML, SC-SM	A-4, A-6	0	0-10	75-100	65-90	50-80
	39-60	Extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand	GP-GM, GP	A-1	0-10	10-30	30-50	20-40	15-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	inches	3-10 inches	4	10	40
957: Weirman, rarely flooded-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-9	Gravelly sandy loam	SM, GM	A-2, A-1	0	0-5	55-80	50-75	40-50
	9-15	Very gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0-5	0-15	40-60	30-50	5-25
	15-60	Extremely gravelly loamy sand, very gravelly loamy sand, very gravelly sand, extremely gravelly sand	GP-GM, GP	A-1	0-5	10-40	30-50	10-45	5-20
958: Grinrod-----	0-4	Very cobbly loam	GC-GM, GC	A-2, A-4	0-10	30-45	45-70	35-60	25-55
	4-10	Very gravelly loam	GC-GM, GC	A-2, A-4	0-5	5-30	50-65	40-55	30-45
	10-27	Very gravelly loam, extremely gravelly clay loam, extremely cobbly loam	GC	A-2	0-10	10-55	30-60	25-55	15-45
	27-37	Unweathered bedrock			---	---	---	---	---
	0-4	Very cobbly loam	GM, GC-GM, ML	A-4	0-10	25-45	50-75	45-70	40-65
Horseflat-----	4-9	Very gravelly loam, very gravelly clay loam, very cobbly loam	GM, GC-GM	A-4, A-2	0-10	10-30	50-70	40-60	35-55
	9-16	Extremely gravelly loam, extremely cobbly loam, very cobbly clay loam	GC, GM	A-2	0-10	10-50	30-60	20-55	15-45
	16-26	Unweathered bedrock			---	---	---	---	---
	0-9	Sand	SM	A-1, A-2	0	0-5	85-100	75-100	35-55
	9-15	Coarse sand, sand, loamy coarse sand	SM	A-1, A-2, A-3	0	0-5	85-100	75-100	30-55
960: Winchester-----	15-60	Coarse sand, sand	SP-SM, SP	A-1, A-2, A-3	0	0-5	85-100	75-100	25-55
	0-5	Very cobbly loamy sand	GM, SM	A-1, A-2	0-5	5-35	45-70	35-60	20-50
	5-17	Very cobbly loamy sand, very gravelly loamy fine sand	GM	A-1	0-5	10-30	45-60	35-50	20-40
	17-60	Very gravelly sand, very cobbly coarse sand, very cobbly loamy sand	GP-GM, GM, GP	A-1	0-10	10-40	20-55	10-50	5-30

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
960: Malaga-----	0-4 4-9	Gravelly sandy loam Gravelly sandy loam, gravelly fine sandy loam, gravelly loam	SM, GM SM	A-4, A-2 A-4, A-2	0 0	0-5 0-10	60-85 75-85	50-75 55-75	40-65 45-60
	9-12	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	40-60	30-55	20-40
	12-19	Extremely gravelly sandy loam	GM	A-1					
	19-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very cobbly sand	GP-GM, GP, SP, SP-SM	A-1	0-10 0-10	5-25 10-35	30-45 25-60	20-35 15-55	15-25 10-30
963: Dumps, landfill-	---	---	---	---	---	---	---	---	---
966: Ellisforde-----	0-6 6-16	Silt loam Silt loam, very fine sandy loam	ML, CL-ML ML, CL-ML	A-4 A-4	0 0	0 0	100 100	100 100	90-10 90-10
	16-28	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	100	90-10
	28-60	Stratified very fine sandy loam to silt loam	ML, CL-ML	A-4	0	0	100	100	90-10
980: Rock Creek-----	0-2 2-14	Very stony silt loam Extremely cobbly clay loam, very cobbly clay loam, very cobbly clay, very gravelly clay	ML GM	A-4 A-2, A-7	10-30 0-10	5-20 10-60	85-95 35-70	70-90 25-50	65-85 20-45
	14-18	Unweathered bedrock			---	---	---	---	---
981: Taneum-----	0-14 14-43	Loam Clay loam, silty clay loam	CL-ML CL	A-4 A-6	0 0	0 0	95-100 95-100	95-100 95-100	85-95 85-90
	43-60	Loam, sandy loam	CL-ML, ML, SC-SM, SM	A-4, A-2	0	0	95-100	95-100	60-95

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number--		
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40
1006: Rock outcrop----- Rubble land----- Glaciers, icefields-----	<i>In</i>				<i>Pct</i>	<i>Pct</i>			
	0-60	Unweathered bedrock			---	---	---	---	---
	0-60	Fragmental material			---	---	---	---	---
	0-60	Consolidated permafrost (ice rich)			---	---	---	---	---
1007: Rock outcrop----- Andic Humicryods	0-60	Unweathered bedrock			---	---	---	---	---
	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	2-5	Very cobbly ashy sandy loam	SM, GM	A-1	0	30-45	50-75	45-65	35-50
	5-11	Cobbly medial loam, very cobbly medial loam, very cobbly medial sandy loam	GM, SM	A-2, A-1, A-4	0-5	25-50	55-75	50-70	35-55
	11-24	Very cobbly medial loam, cobbly medial loam, very cobbly medial sandy loam	GM, SM	A-2, A-1, A-4	0-5	25-50	55-75	50-70	35-55
1441: Teanaway-----	24-37	Extremely cobbly loam, extremely cobbly sandy loam	GM	A-1	0-5	45-60	30-45	25-40	15-30
	37-47	Unweathered bedrock			---	---	---	---	---
	0-3	Moderately decomposed plant material	PT	A-8	0	0	100	100	60-100
	3-7	Ashy loam	ML	A-4	0	0	100	100	90-95
	7-22	Loam, silt loam	ML	A-4	0	0	90-100	85-100	75-95
	22-42	Loam, clay loam, silt loam	CL	A-6	0	0	90-100	85-100	75-95
	42-51	Loam, clay loam, gravelly clay loam, gravelly loam	CL, SC	A-6	0	0	85-100	75-100	65-90
	51-60	Gravelly loam, clay loam, loam, gravelly clay loam	CL, SC	A-6, A-7	0	0-10	75-100	65-100	55-90

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage pass sieve number-							
			Unified	AASHTO	inches	Pct	inches	Pct	4	10	40			
6710: McDaniel-----	In					Pct	Pct							
	0-11	Very stony ashy loam	CL-ML											
	11-19	Gravelly ashy loam, very gravelly ashy loam	GC-GM, GC	A-4 A-4, A-2	10-25 0-5	5-10 0-30	75-80 60-80	70-75 50-75	65-75 35-60					
	19-24	Very cobbly clay loam, extremely gravelly clay loam, very gravelly clay loam	GC, SC	A-6, A-2	0-10	10-35	50-75	40-60	30-45					
	24-32	Very cobbly clay loam, very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-2, A-6	0-10	10-35	45-70	35-60	20-45					
	32-60	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam	GC	A-2, A-6	0-10	20-60	30-70	20-60	15-45					
DAM:														
Dam-----	---	---	---	---	---	---	---	---	---	---	---	---	---	
W:														
Water-----	---	---	---	---	---	---	---	---	---	---	---	---	---	

Table 9.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility gro-
erodibility index" apply only to the mineral or saturated organic surface layer. Absence of an
that data were not estimated.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
2: Saydab-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	7-10	0.85-1.10	0.6-2	0.16-0.19	0.0-2.9	3.0-5.0	.24
	3-10	7-15	0.85-1.10	0.6-2	0.14-0.17	0.0-2.9	2.0-4.0	.24
	10-17	7-15	0.85-1.10	0.6-2	0.14-0.17	0.0-2.9	1.0-2.0	.24
	17-27	7-15	0.85-1.10	0.6-2	0.11-0.14	0.0-2.9	0.5-1.0	.24
	27-36	---	---	---	---	---	---	---
3: Naxing-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	7-10	0.85-1.10	0.6-2	0.15-0.17	0.0-2.9	3.0-7.0	.37
	6-18	5-15	0.85-1.10	0.6-2	0.11-0.16	0.0-2.9	2.0-4.0	.28
	18-38	5-15	0.85-1.10	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	38-60	5-15	1.10-1.25	0.6-2	0.06-0.07	0.0-2.9	0.0-1.0	.02
4: Naxing-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	7-10	0.85-1.10	0.6-2	0.12-0.16	0.0-2.9	3.0-7.0	.24
	6-18	5-15	0.85-1.10	0.6-2	0.11-0.16	0.0-2.9	2.0-4.0	.28
	18-38	5-15	0.85-1.10	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	38-60	5-15	1.10-1.25	0.6-2	0.06-0.07	0.0-2.9	0.0-1.0	.02
6: Ganis-----	0-10	10-18	1.10-1.30	0.6-2	0.18-0.20	0.0-2.9	2.0-4.0	.43
	10-19	10-18	1.10-1.30	0.6-2	0.13-0.15	0.0-2.9	0.5-2.0	.28
	19-29	---	---	---	---	---	---	---
8: Sapkin-----	0-5	10-20	1.15-1.30	0.6-2	0.11-0.13	0.0-2.9	3.0-5.0	.10
	5-16	10-20	1.30-1.45	0.6-2	0.13-0.16	0.0-2.9	1.0-2.0	.10
	16-25	10-20	1.30-1.45	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.17
	25-36	18-30	1.30-1.45	0.6-2	0.06-0.10	0.0-2.9	0.0-0.5	.10
	36-46	---	---	---	---	---	---	---
9: Naxing-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	7-10	0.85-1.10	0.6-2	0.15-0.17	0.0-2.9	3.0-7.0	.37
	6-18	5-15	0.85-1.10	0.6-2	0.11-0.16	0.0-2.9	2.0-4.0	.28
	18-38	5-15	0.85-1.10	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	38-60	5-15	1.10-1.25	0.6-2	0.06-0.07	0.0-2.9	0.0-1.0	.02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
10: Anatone-----	0-3 3-10 10-14 14-24	16-23 18-27 18-27 ---	1.20-1.30 1.20-1.30 1.30-1.40 ---	0.6-2 0.6-2 0.6-2 ---	0.09-0.11 0.09-0.12 0.06-0.10 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	2.0-3.0 1.0-2.0 0.5-2.0 ---	.10 .10 .10 ---
10Y: Bocker-----	0-3 3-9 9-19	18-22 20-24 ---	1.15-1.35 1.30-1.50 ---	0.6-2 0.6-2 ---	0.10-0.12 0.09-0.11 ---	0.0-2.9 0.0-2.9 ---	1.0-2.0 1.0-2.0 ---	.17 .15 ---
11: Sapkin-----	0-5 5-16 16-25 25-36 36-46	10-20 10-20 10-20 18-30 ---	1.15-1.30 1.30-1.45 1.30-1.45 1.30-1.45 ---	0.6-2 0.6-2 0.6-2 0.6-2 ---	0.11-0.13 0.13-0.16 0.10-0.13 0.06-0.10 ---	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 ---	3.0-5.0 1.0-2.0 0.5-1.0 0.0-0.5 ---	.10 .10 .17 .10 ---
Rubble land-----	0-60	---	---	---	---	---	---	---
12: Sapkin-----	0-5 5-16 16-25 25-36 36-46	10-20 10-20 10-20 18-30 ---	1.15-1.30 1.30-1.45 1.30-1.45 1.30-1.45 ---	0.6-2 0.6-2 0.6-2 0.6-2 ---	0.11-0.13 0.13-0.16 0.10-0.13 0.06-0.10 ---	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 ---	3.0-5.0 1.0-2.0 0.5-1.0 0.0-0.5 ---	.10 .10 .17 .10 ---
13: Jumpe-----	0-2 2-4 4-12 12-28 28-60	0-25 8-15 10-19 15-24 8-15	0.10-0.30 1.10-1.30 1.10-1.30 1.15-1.35 1.30-1.50	6-100 0.6-2 0.6-2 0.6-2 0.6-2	0.30-0.60 0.11-0.13 0.08-0.10 0.07-0.08 0.06-0.08	---	60-95 2.0-4.0 0.5-1.0 0.0-0.5 0.0-0.5	--- .20 .24 .15 .10
14: Jumpe-----	0-2 2-4 4-12 12-28 28-60	0-25 8-15 10-19 15-24 8-15	0.10-0.30 1.10-1.30 1.10-1.30 1.15-1.35 1.30-1.50	6-100 0.6-2 0.6-2 0.6-2 0.6-2	0.30-0.60 0.11-0.13 0.08-0.10 0.07-0.08 0.06-0.08	---	60-95 2.0-4.0 0.5-1.0 0.0-0.5 0.0-0.5	--- .20 .24 .15 .10
15: Stemilt-----	0-1 1-5 5-17 17-60	0-25 10-20 15-23 20-35	0.10-0.30 1.10-1.30 1.10-1.30 1.30-1.50	6-100 0.6-2 0.6-2 0.2-0.6	0.30-0.60 0.17-0.20 0.08-0.12 0.08-0.12	---	60-95 2.0-4.0 1.0-2.0 0.0-1.0	--- .32 .37 .10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
16: Stemilt-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	10-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	5-17	15-23	1.10-1.30	0.6-2	0.08-0.12	0.0-2.9	1.0-2.0	.37
	17-60	20-35	1.30-1.50	0.2-0.6	0.08-0.12	0.0-2.9	0.0-1.0	.10
Rock outcrop-----	0-60	---	---	---	---	---	---	---
18: Loneridge-----	0-4	15-25	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.28
	4-19	15-25	1.10-1.30	0.6-2	0.09-0.13	0.0-2.9	0.5-1.0	.15
	19-46	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.10
	46-60	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.05
19: Darland-----	0-7	10-18	1.10-1.30	0.6-2	0.11-0.13	0.0-2.9	2.0-5.0	.10
	7-15	10-18	1.10-1.30	0.6-2	0.10-0.13	0.0-2.9	2.0-4.0	.15
	15-21	10-18	1.15-1.35	2-6	0.10-0.11	0.0-2.9	1.0-2.0	.15
	21-32	10-18	1.20-1.40	2-6	0.03-0.04	0.0-2.9	0.5-1.0	.05
	32-60	5-15	1.25-1.50	2-6	0.01-0.02	0.0-2.9	0.0-0.5	.02
20: Darland, moist-----	0-7	10-18	1.10-1.30	0.6-2	0.11-0.13	0.0-2.9	2.0-5.0	.10
	7-15	10-18	1.10-1.30	0.6-2	0.10-0.13	0.0-2.9	2.0-4.0	.15
	15-21	10-18	1.15-1.35	2-6	0.10-0.11	0.0-2.9	1.0-2.0	.15
	21-32	10-18	1.20-1.40	2-6	0.03-0.04	0.0-2.9	0.5-1.0	.05
	32-60	5-15	1.25-1.50	2-6	0.01-0.02	0.0-2.9	0.0-0.5	.02
24: Loneridge, north slopes-----	0-4	15-25	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.28
	4-19	15-25	1.10-1.30	0.6-2	0.09-0.13	0.0-2.9	0.5-1.0	.15
	19-46	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.10
	46-60	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.05
27: Tekison-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	15-20	1.15-1.35	0.6-2	0.13-0.16	0.0-2.9	1.0-3.0	.20
	8-15	20-30	1.25-1.45	0.6-2	0.11-0.14	0.0-2.9	1.0-2.0	.05
	15-60	40-55	1.15-1.30	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.02
28: Odo-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-11	15-20	1.15-1.35	0.6-2	0.14-0.17	0.0-2.9	2.0-4.0	.24
	11-19	15-20	1.30-1.50	0.6-2	0.11-0.17	0.0-2.9	1.0-2.0	.37
	19-60	18-25	1.45-1.65	0.6-2	0.11-0.13	0.0-2.9	0.5-1.0	.17

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
29: Stemilt, warm-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	20-25	1.10-1.30	0.6-2	0.10-0.11	0.0-2.9	1.0-3.0	.10
	5-17	20-25	1.15-1.35	0.6-2	0.08-0.09	0.0-2.9	0.5-2.0	.15
	17-60	20-35	1.30-1.50	0.2-0.6	0.08-0.12	0.0-2.9	0.0-1.0	.10
30: Stemilt-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	10-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	5-17	15-23	1.10-1.30	0.6-2	0.08-0.12	0.0-2.9	1.0-2.0	.37
	17-60	20-35	1.30-1.50	0.2-0.6	0.08-0.12	0.0-2.9	0.0-1.0	.10
32: Stemilt-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	10-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	5-17	15-23	1.10-1.30	0.6-2	0.08-0.12	0.0-2.9	1.0-2.0	.37
	17-60	20-35	1.30-1.50	0.2-0.6	0.08-0.12	0.0-2.9	0.0-1.0	.10
33: Bocker-----	0-3	18-22	1.15-1.35	0.6-2	0.10-0.12	0.0-2.9	1.0-2.0	.17
	3-9	20-24	1.30-1.50	0.6-2	0.09-0.11	0.0-2.9	1.0-2.0	.15
	9-19	---	---	---	---	---	---	---
Jumpe-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	8-15	1.10-1.30	0.6-2	0.11-0.13	0.0-2.9	2.0-4.0	.20
	4-12	10-19	1.10-1.30	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.24
	12-28	15-24	1.15-1.35	0.6-2	0.07-0.08	0.0-2.9	0.0-0.5	.15
	28-60	8-15	1.30-1.50	0.6-2	0.06-0.08	0.0-2.9	0.0-0.5	.10
34: Bocker-----	0-3	18-22	1.15-1.35	0.6-2	0.10-0.12	0.0-2.9	1.0-2.0	.17
	3-9	20-24	1.30-1.50	0.6-2	0.09-0.11	0.0-2.9	1.0-2.0	.15
	9-19	---	---	---	---	---	---	---
Sapkin-----	0-5	10-20	1.15-1.30	0.6-2	0.11-0.13	0.0-2.9	3.0-5.0	.10
	5-16	10-20	1.30-1.45	0.6-2	0.13-0.16	0.0-2.9	1.0-2.0	.10
	16-25	10-20	1.30-1.45	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.17
	25-36	18-30	1.30-1.45	0.6-2	0.06-0.10	0.0-2.9	0.0-0.5	.10
	36-46	---	---	---	---	---	---	---
35: Bocker-----	0-3	18-22	1.15-1.35	0.6-2	0.10-0.12	0.0-2.9	1.0-2.0	.17
	3-9	20-24	1.30-1.50	0.6-2	0.09-0.11	0.0-2.9	1.0-2.0	.15
	9-19	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
35: Stemilt-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	10-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	5-17	15-23	1.10-1.30	0.6-2	0.08-0.12	0.0-2.9	1.0-2.0	.37
	17-60	20-35	1.30-1.50	0.2-0.6	0.08-0.12	0.0-2.9	0.0-1.0	.10
40: Rubble land-----	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
41: Cliffdell-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.85-1.00	2-6	0.08-0.13	0.0-2.9	0.5-3.0	.15
	9-26	10-18	1.20-1.35	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.15
	26-60	10-18	1.25-1.40	0.6-2	0.04-0.05	0.0-2.9	0.0-0.5	.10
42: Cliffdell-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.85-1.00	2-6	0.08-0.13	0.0-2.9	0.5-3.0	.15
	9-26	10-18	1.20-1.35	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.15
	26-60	10-18	1.25-1.40	0.6-2	0.04-0.05	0.0-2.9	0.0-0.5	.10
48: Jumpe, north slopes---	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	8-15	1.10-1.30	0.6-2	0.11-0.13	0.0-2.9	2.0-4.0	.17
	4-12	10-19	1.10-1.30	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.24
	12-28	15-24	1.15-1.35	0.6-2	0.07-0.08	0.0-2.9	0.0-0.5	.15
49: Jumpe, south slopes---	28-60	8-15	1.30-1.50	0.6-2	0.06-0.08	0.0-2.9	0.0-0.5	.10
	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	8-15	1.10-1.30	0.6-2	0.11-0.13	0.0-2.9	2.0-4.0	.20
	4-12	10-19	1.10-1.30	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.24
50: Jumpe, south slopes---	12-28	15-24	1.15-1.35	0.6-2	0.07-0.08	0.0-2.9	0.0-0.5	.15
	28-60	8-15	1.30-1.50	0.6-2	0.06-0.08	0.0-2.9	0.0-0.5	.10
	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	8-15	1.10-1.30	0.6-2	0.11-0.13	0.0-2.9	2.0-4.0	.20
	4-12	10-19	1.10-1.30	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.24
	12-28	15-24	1.15-1.35	0.6-2	0.07-0.08	0.0-2.9	0.0-0.5	.15
	28-60	8-15	1.30-1.50	0.6-2	0.06-0.08	0.0-2.9	0.0-0.5	.10
	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	8-15	1.10-1.30	0.6-2	0.11-0.13	0.0-2.9	2.0-4.0	.20
	4-12	10-19	1.10-1.30	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.24
	12-28	15-24	1.15-1.35	0.6-2	0.07-0.08	0.0-2.9	0.0-0.5	.15
	28-60	8-15	1.30-1.50	0.6-2	0.06-0.08	0.0-2.9	0.0-0.5	.10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
51: Jumpe-----	0-2	0-25	0.10-0.30					
	2-4	8-15	1.10-1.30	6-100	0.30-0.60	---	60-95	---
				0.6-2	0.11-0.13	0.0-2.9	2.0-4.0	.20
	4-12	10-19	1.10-1.30	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.24
	12-28	15-24	1.15-1.35	0.6-2	0.07-0.08	0.0-2.9	0.0-0.5	.15
Rock outcrop-----	28-60	8-15	1.30-1.50	0.6-2	0.06-0.08	0.0-2.9	0.0-0.5	.10
	0-60	---	---	---	---	---	---	---
52: Loneridge, north slopes-----	0-4	15-25	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.28
	4-19	15-25	1.10-1.30	0.6-2	0.09-0.13	0.0-2.9	0.5-1.0	.15
	19-46	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.10
	46-60	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.05
53: Loneridge, south slopes-----	0-4	15-25	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.28
	4-19	15-25	1.10-1.30	0.6-2	0.09-0.13	0.0-2.9	0.5-1.0	.15
	19-46	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.10
	46-60	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.05
53M: Tekison-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	15-20	1.15-1.35	0.6-2	0.13-0.16	0.0-2.9	1.0-3.0	.20
	8-15	20-30	1.25-1.45	0.6-2	0.11-0.14	0.0-2.9	1.0-2.0	.05
	15-60	40-55	1.15-1.30	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.02
54: Loneridge, south slopes-----	0-4	15-25	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.28
	4-19	15-25	1.10-1.30	0.6-2	0.09-0.13	0.0-2.9	0.5-1.0	.15
	19-46	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.10
	46-60	35-55	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.0-0.5	.05
54M: Tekison-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	15-20	1.15-1.35	0.6-2	0.13-0.16	0.0-2.9	1.0-3.0	.20
	8-15	20-30	1.25-1.45	0.6-2	0.11-0.14	0.0-2.9	1.0-2.0	.05
	15-60	40-55	1.15-1.30	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
55: Shinn-----								
	0-2	15-20	1.25-1.35	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-9	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
56: Shinn-----	9-18	---	---	---	---	---	---	---
	0-2	15-20	1.25-1.35	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
Nint-----	6-9	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	9-18	---	---	---	---	---	---	---
	0-9	15-20	1.10-1.30	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.17
Shushuskin-----	9-13	27-33	1.25-1.45	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.10
	13-19	27-35	1.25-1.45	0.2-0.6	0.05-0.13	0.0-2.9	1.0-2.0	.10
	19-38	27-35	1.25-1.45	0.2-0.6	0.05-0.11	0.0-2.9	0.5-2.0	.10
	38-48	---	---	---	---	---	---	---
57: Nard, sandstone substratum-----								
	0-4	18-22	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.28
	4-8	18-22	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	8-13	18-22	1.10-1.30	0.6-2	0.18-0.21	3.0-5.9	1.0-2.0	.37
62: Pachneum-----	13-19	25-35	1.30-1.45	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.37
	19-23	28-35	1.30-1.45	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.32
	23-32	28-35	1.30-1.45	0.2-0.6	0.12-0.18	3.0-5.9	1.0-2.0	.10
	32-42	---	---	---	---	---	---	---
57: Nard, sandstone substratum-----								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	11-13	1.15-1.35	0.6-2	0.10-0.13	0.0-2.9	1.0-3.0	.17
	4-12	11-13	1.10-1.30	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.49
62: Pachneum-----	12-24	18-28	1.25-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37
	24-34	20-35	1.45-1.70	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37
	34-43	20-35	1.55-1.75	0.2-0.6	0.08-0.15	3.0-5.9	0.0-0.5	.43
	43-47	---	---	---	---	---	---	---
62: Pachneum-----								
	0-8	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.24
	8-18	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.32
	18-26	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.28
62: Pachneum-----	26-33	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.32
	33-47	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	47-60	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
64: Meystre-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	10-20	1.15-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.32
	4-12	16-22	1.30-1.45	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37
	12-42	25-35	1.25-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	42-60	10-35	1.35-1.50	0.6-2	0.13-0.15	0.0-2.9	0.0-0.5	.24
65: Meystre-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	10-20	1.15-1.30	0.6-2	0.14-0.16	0.0-2.9	2.0-4.0	.20
	4-12	16-22	1.30-1.45	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37
	12-42	25-35	1.25-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	42-60	10-35	1.35-1.50	0.6-2	0.13-0.15	0.0-2.9	0.0-0.5	.24
66: Jumpmore, south slopes, stony surface	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	10-14	1.10-1.30	0.6-2	0.12-0.16	0.0-2.9	1.0-4.0	.15
	5-14	10-14	1.10-1.30	0.6-2	0.07-0.14	0.0-2.9	0.5-1.0	.24
	14-30	10-14	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.15
	30-60	18-29	1.25-1.45	0.6-2	0.03-0.09	0.0-2.9	0.0-0.5	.10
67: Jumpmore, north slopes	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	10-14	1.10-1.30	0.6-2	0.12-0.16	0.0-2.9	1.0-4.0	.15
	5-14	10-14	1.10-1.30	0.6-2	0.07-0.14	0.0-2.9	0.5-1.0	.24
	14-30	10-14	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.15
	30-60	18-29	1.25-1.45	0.6-2	0.03-0.09	0.0-2.9	0.0-0.5	.10
69: Stirrurp-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.60-0.85	2-6	0.11-0.14	0.0-2.9	3.0-5.0	.15
	4-8	5-15	0.60-0.85	2-6	0.08-0.17	0.0-2.9	10-15	.10
	8-24	5-15	0.60-0.85	2-6	0.08-0.12	0.0-2.9	6.0-10	.15
	24-36	5-19	0.60-0.85	2-6	0.04-0.08	0.0-2.9	2.0-5.0	.05
	36-43	15-23	1.30-1.45	2-6	0.03-0.05	0.0-2.9	0.5-2.0	.02
	43-53	---	---	---	---	---	---	---
70: McDaniel-----	0-11	15-20	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.10
	11-19	15-20	1.15-1.35	0.6-2	0.09-0.15	0.0-2.9	2.0-3.0	.17
	19-24	27-35	1.20-1.40	0.2-0.6	0.08-0.13	0.0-2.9	1.0-2.0	.10
	24-32	27-35	1.20-1.40	0.2-0.6	0.07-0.13	0.0-2.9	1.0-2.0	.10
	32-60	27-35	1.30-1.40	0.2-0.6	0.05-0.12	0.0-2.9	0.5-2.0	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
71: Kiper								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-10	1.10-1.30	2-6	0.09-0.11	0.0-2.9	1.0-3.0	.15
	4-8	5-10	1.10-1.30	2-6	0.09-0.11	0.0-2.9	0.5-2.0	.20
	8-35	5-10	1.35-1.45	2-6	0.08-0.11	0.0-2.9	0.5-1.0	.20
75: Yahne	35-60	5-10	1.30-1.50	2-6	0.06-0.10	0.0-2.9	0.0-0.5	.10
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-15	0.85-1.00	0.6-2	0.12-0.14	3.0-5.9	1.0-3.0	.24
	9-17	15-25	0.85-1.10	0.6-2	0.08-0.12	3.0-5.9	0.5-1.0	.17
76: Yahne	17-60	35-55	1.25-1.40	0.06-0.2	0.07-0.11	0.0-2.9	0.0-1.0	.10
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-15	0.85-1.00	0.6-2	0.12-0.14	3.0-5.9	1.0-3.0	.24
	9-17	15-25	0.85-1.10	0.6-2	0.08-0.12	3.0-5.9	0.5-1.0	.17
77: Ainsley	17-60	35-55	1.25-1.40	0.06-0.2	0.07-0.11	0.0-2.9	0.0-1.0	.10
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-2	8-12	0.85-1.00	2-6	0.11-0.13	0.0-2.9	1.0-4.0	.10
	2-7	8-12	0.85-1.00	2-6	0.11-0.13	0.0-2.9	0.5-2.0	.15
78: Ainsley	7-22	20-25	0.85-1.10	0.6-2	0.08-0.09	0.0-2.9	0.5-1.0	.15
	22-34	35-40	1.20-1.40	0.2-0.6	0.06-0.08	3.0-5.9	0.5-1.0	.05
	34-60	35-50	1.25-1.40	0.2-0.6	0.06-0.08	3.0-5.9	0.0-1.0	.05
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
80: Cliffdell	1-2	8-12	0.85-1.00	2-6	0.11-0.13	0.0-2.9	1.0-4.0	.10
	2-7	8-12	0.85-1.00	2-6	0.11-0.13	0.0-2.9	0.5-2.0	.15
	7-22	20-25	0.85-1.10	0.6-2	0.08-0.09	0.0-2.9	0.5-1.0	.15
	22-34	35-40	1.20-1.40	0.2-0.6	0.06-0.08	3.0-5.9	0.5-1.0	.05
	34-60	35-50	1.25-1.40	0.2-0.6	0.06-0.08	3.0-5.9	0.0-1.0	.05
80: Cliffdell								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.85-1.00	2-6	0.08-0.13	0.0-2.9	0.5-3.0	.15
	9-26	10-18	1.20-1.35	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.15
	26-60	10-18	1.25-1.40	0.6-2	0.04-0.05	0.0-2.9	0.0-0.5	.10
Rock outcrop								
	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
81: Terence-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-6	5-8	0.85-1.10	2-6	0.08-0.11	0.0-2.9	2.0-3.0	.10
	6-14	5-15	0.85-1.10	0.6-2	0.07-0.15	0.0-2.9	0.5-1.0	.20
	14-29	7-15	0.85-1.10	0.6-2	0.05-0.13	0.0-2.9	0.5-1.0	.10
	29-60	7-15	1.15-1.35	0.6-2	0.04-0.08	0.0-2.9	0.0-1.0	.10
83: Terence-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-6	5-8	0.85-1.10	2-6	0.08-0.11	0.0-2.9	2.0-3.0	.10
	6-14	5-15	0.85-1.10	0.6-2	0.07-0.15	0.0-2.9	0.5-1.0	.20
	14-29	7-15	0.85-1.10	0.6-2	0.05-0.13	0.0-2.9	0.5-1.0	.10
	29-60	7-15	1.15-1.35	0.6-2	0.04-0.08	0.0-2.9	0.0-1.0	.10
85: Spexarth-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	4-8	0.85-1.10	2-6	0.11-0.14	0.0-2.9	2.0-4.0	.20
	5-19	5-15	0.85-1.10	2-6	0.11-0.20	0.0-2.9	0.5-2.0	.28
	19-28	5-15	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-2.0	.37
	28-38	---	---	---	---	---	---	---
86: Osborn, south slopes--	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.75-1.00	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.20
	9-16	5-15	1.30-1.40	2-6	0.14-0.18	0.0-2.9	0.5-1.0	.28
	16-33	5-15	1.30-1.40	2-6	0.14-0.18	0.0-2.9	0.0-0.5	.37
	33-42	---	---	---	---	---	---	---
87: Osborn, north slopes--	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.75-1.00	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.20
	9-16	5-15	1.30-1.40	2-6	0.14-0.18	0.0-2.9	0.5-1.0	.28
	16-33	5-15	1.30-1.40	2-6	0.14-0.18	0.0-2.9	0.0-0.5	.37
	33-42	---	---	---	---	---	---	---
89: Cryaquepts-----	0-7	20-27	0.85-1.10	0.6-2	0.14-0.21	0.0-2.9	2.0-5.0	.28
	7-27	20-27	0.85-1.10	0.2-0.6	0.15-0.21	0.0-2.9	0.5-2.0	.43
	27-60	20-35	1.20-1.45	0.2-0.6	0.15-0.21	0.0-2.9	0.0-1.0	.37

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
90: Bertolotti, south slopes-----	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-8	0.85-1.00	2-6	0.11-0.13	0.0-2.9	1.0-2.0	.24
	3-11	5-10	0.85-1.00	2-6	0.11-0.15	0.0-2.9	0.5-2.0	.28
	11-17	10-15	1.00-1.30	0.6-2	0.07-0.09	0.0-2.9	0.5-1.0	.20
	17-27	10-15	1.30-1.50	0.6-2	0.04-0.06	0.0-2.9	0.5-1.0	.15
91: Bertolotti, north slopes-----	27-60	10-15	1.30-1.50	0.6-2	0.04-0.07	0.0-2.9	0.0-0.5	.10
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-8	0.85-1.00	2-6	0.11-0.13	0.0-2.9	1.0-2.0	.24
	3-11	5-10	0.85-1.00	2-6	0.11-0.15	0.0-2.9	0.5-2.0	.28
	11-17	10-15	1.00-1.30	0.6-2	0.07-0.09	0.0-2.9	0.5-1.0	.20
	17-27	10-15	1.30-1.50	0.6-2	0.04-0.06	0.0-2.9	0.5-1.0	.15
92: Rock outcrop-----	27-60	10-15	1.30-1.50	0.6-2	0.04-0.07	0.0-2.9	0.0-0.5	.10
	0-60	---	---	---	---	---	---	---
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-8	0.85-1.00	2-6	0.11-0.13	0.0-2.9	1.0-2.0	.24
	3-11	5-10	0.85-1.00	2-6	0.11-0.15	0.0-2.9	0.5-2.0	.28
93: Bertolotti-----	11-17	10-15	1.00-1.30	0.6-2	0.07-0.09	0.0-2.9	0.5-1.0	.20
	17-27	10-15	1.30-1.50	0.6-2	0.04-0.06	0.0-2.9	0.5-1.0	.15
	27-60	10-15	1.30-1.50	0.6-2	0.04-0.07	0.0-2.9	0.0-0.5	.10
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-8	0.85-1.00	2-6	0.11-0.13	0.0-2.9	1.0-2.0	.24
	3-11	5-10	0.85-1.00	2-6	0.11-0.15	0.0-2.9	0.5-2.0	.28
96: Terence-----	11-17	10-15	1.00-1.30	0.6-2	0.07-0.09	0.0-2.9	0.5-1.0	.20
	17-27	10-15	1.30-1.50	0.6-2	0.04-0.06	0.0-2.9	0.5-1.0	.15
	27-60	10-15	1.30-1.50	0.6-2	0.04-0.07	0.0-2.9	0.0-0.5	.10
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-6	5-8	0.85-1.10	2-6	0.08-0.11	0.0-2.9	2.0-3.0	.10
	6-14	5-15	0.85-1.10	0.6-2	0.07-0.15	0.0-2.9	0.5-1.0	.20
14-29	7-15	0.85-1.10	0.6-2	0.05-0.13	0.0-2.9	0.5-1.0	0.5-1.0	.10
	29-60	7-15	1.15-1.35	0.6-2	0.04-0.08	0.0-2.9	0.0-1.0	.10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
97: Stilgar-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-8	0.85-1.10	2-6	0.09-0.11	0.0-2.9	1.0-6.0	.10
	9-18	5-15	0.85-1.10	2-6	0.09-0.13	0.0-2.9	1.0-3.0	.10
	18-38	5-15	0.85-1.10	2-6	0.07-0.09	0.0-2.9	0.5-1.0	.15
	38-60	5-15	1.15-1.35	2-6	0.06-0.09	0.0-2.9	0.5-1.0	.10
101: Standup-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-8	0.85-1.10	2-6	0.07-0.09	0.0-2.9	1.0-3.0	.05
	5-26	10-15	1.20-1.40	2-6	0.05-0.07	0.0-2.9	0.5-2.0	.05
	26-60	10-15	1.20-1.40	2-6	0.04-0.06	0.0-2.9	0.0-1.0	.02
102: Standup, north slopes	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-8	0.85-1.10	2-6	0.07-0.09	0.0-2.9	1.0-3.0	.05
	5-26	10-15	1.20-1.40	2-6	0.05-0.07	0.0-2.9	0.5-2.0	.05
	26-60	10-15	1.20-1.40	2-6	0.04-0.06	0.0-2.9	0.0-1.0	.02
104: Carrier-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-10	0.85-1.10	2-6	0.07-0.09	0.0-2.9	1.0-3.0	.15
	3-9	5-12	0.85-1.10	0.6-2	0.06-0.12	0.0-2.9	0.5-2.0	.10
	9-36	5-12	0.85-1.10	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.10
	36-60	5-15	0.85-1.20	0.6-2	0.04-0.09	0.0-2.9	0.0-0.5	.05
105: Carrier-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	1.0-3.0	.15
	3-9	5-12	0.85-1.10	0.6-2	0.06-0.12	0.0-2.9	0.5-2.0	.10
	9-36	5-12	0.85-1.10	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.10
	36-60	5-15	0.85-1.20	0.6-2	0.04-0.09	0.0-2.9	0.0-0.5	.05
106: Carrier-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	1.0-3.0	.15
	3-9	5-12	0.85-1.10	0.6-2	0.06-0.12	0.0-2.9	0.5-2.0	.10
	9-36	5-12	0.85-1.10	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.10
	36-60	5-15	0.85-1.20	0.6-2	0.04-0.09	0.0-2.9	0.0-0.5	.05
108: Jimek-----	0-6	5-10	0.85-1.10	2-6	0.10-0.12	0.0-2.9	1.0-5.0	.10
	6-10	7-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.24
	10-25	7-15	0.85-1.10	2-6	0.06-0.08	0.0-2.9	0.5-1.0	.10
	25-38	5-10	0.85-1.10	2-6	0.02-0.03	0.0-2.9	0.0-1.0	.02
	38-48	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
112: Natkim-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-8	0.85-1.10	2-6	0.09-0.11	0.0-2.9	1.0-4.0	.10
	8-40	5-15	0.85-1.10	2-6	0.06-0.11	0.0-2.9	0.5-1.0	.10
	40-60	5-15	1.20-1.40	2-6	0.06-0.10	0.0-2.9	0.0-0.5	.05
Rock outcrop-----	0-60	---	---	---	---	---	---	---
115: Jimek-----	0-6	5-10	0.85-1.10	2-6	0.10-0.12	0.0-2.9	1.0-5.0	.10
	6-10	7-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.24
	10-25	7-15	0.85-1.10	2-6	0.06-0.08	0.0-2.9	0.5-1.0	.10
	25-38	5-10	0.85-1.10	2-6	0.02-0.03	0.0-2.9	0.0-1.0	.02
	38-48	---	---	---	---	---	---	---
123: Kaner-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	7-13	0.85-1.10	0.6-2	0.11-0.13	0.0-2.9	2.0-6.0	.15
	4-12	7-15	0.85-1.10	2-6	0.10-0.15	0.0-2.9	1.0-3.0	.20
	12-23	7-15	0.85-1.10	2-6	0.09-0.11	0.0-2.9	1.0-2.0	.17
	23-36	7-15	0.85-1.00	2-6	0.06-0.08	0.0-2.9	0.5-2.0	.10
	36-60	7-15	1.15-1.35	2-6	0.06-0.08	0.0-2.9	0.0-0.5	.10
125: Bearrun-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-7	4-8	0.85-1.10	2-6	0.13-0.16	0.0-2.9	1.0-2.0	.28
	7-23	10-30	1.10-1.50	0.6-2	0.16-0.20	3.0-5.9	0.5-1.0	.43
	23-45	38-70	1.35-1.65	0.06-0.2	0.05-0.10	6.0-8.9	0.0-0.5	.24
	45-60	30-55	1.35-1.65	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.15
128: Kafing, north slopes--	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-4.0	.24
	6-13	15-30	1.10-1.30	0.6-2	0.16-0.20	0.0-2.9	0.5-1.0	.37
	13-24	27-35	1.45-1.60	0.2-0.6	0.13-0.15	3.0-5.9	0.5-1.0	.32
	24-60	27-35	1.55-1.65	0.2-0.6	0.10-0.12	3.0-5.9	0.0-0.5	.32
129: Kafing, south slopes--	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-4.0	.24
	6-13	15-30	1.10-1.30	0.6-2	0.16-0.20	0.0-2.9	0.5-1.0	.37
	13-24	27-35	1.45-1.60	0.2-0.6	0.13-0.15	3.0-5.9	0.5-1.0	.32
	24-60	27-35	1.55-1.65	0.2-0.6	0.10-0.12	3.0-5.9	0.0-0.5	.32

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
130: Brisky-----	0-4 4-9 9-18 18-22	5-15 7-15 5-15 ---	1.10-1.30 1.10-1.30 1.20-1.45 ---	0.6-2 0.6-2 0.6-2 ---	0.08-0.12 0.07-0.12 0.05-0.10 ---	1.0-2.9 0.0-2.9 0.0-2.9 ---	1.0-3.0 1.0-3.0 1.0-2.0 ---	.17 .17 .05 ---
131: Kladnick, warm-----	0-1 1-4 4-15 15-24 24-60	0-25 5-8 5-10 0-5 0-5	0.10-0.30 0.85-1.00 0.85-1.00 1.10-1.35 1.30-1.55	6-100 2-6 2-6 6-20 20-100	0.30-0.60 0.09-0.10 0.09-0.11 0.05-0.08 0.03-0.05	---	60-95 2.0-4.0 0.5-1.0 0.0-1.0 0.0-0.5	--- .05 .15 .10 .02
137: Dumps, mine-----	---	---	---	---	---	---	---	---
138: Pits, mine-----	---	---	---	---	---	---	---	---
139: Nard-----	0-1 1-4 4-12 12-24 24-34 34-60	0-25 11-13 11-13 18-28 20-35 20-35	0.10-0.30 1.10-1.30 1.10-1.30 1.25-1.45 1.45-1.70 1.55-1.75	6-100 0.6-2 0.6-2 0.2-0.6 0.2-0.6 0.2-0.6	0.30-0.60 0.19-0.21 0.17-0.21 0.17-0.21 0.15-0.19 0.08-0.15	---	60-95 1.0-3.0 0.5-1.0 0.5-1.0 0.0-0.5 0.0-0.5	--- .37 .49 .37 .37 .37
141: Nard-----	0-1 1-4 4-12 12-24 24-34 34-60	0-25 11-13 11-13 18-28 20-35 20-35	0.10-0.30 1.10-1.30 1.10-1.30 1.25-1.45 1.45-1.70 1.55-1.75	6-100 0.6-2 0.6-2 0.2-0.6 0.2-0.6 0.2-0.6	0.30-0.60 0.19-0.21 0.17-0.21 0.17-0.21 0.15-0.19 0.08-0.15	---	60-95 1.0-3.0 0.5-1.0 0.5-1.0 0.0-0.5 0.0-0.5	--- .37 .49 .37 .37 .37
142: Scotties-----	0-1 1-11 11-19 19-31 31-45 45-49	0-25 5-8 10-18 10-18 5-10 ---	0.10-0.30 0.85-1.00 0.85-1.10 1.10-1.35 1.25-1.50 ---	6-100 2-6 0.6-2 0.6-2 2-20 ---	0.30-0.60 0.08-0.12 0.07-0.11 0.07-0.11 0.01-0.03 ---	---	60-95 1.0-3.0 0.5-1.0 0.0-0.5 0.0-0.5 ---	--- .24 .17 .17 .10 ---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
144:								
Nard-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	11-13	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	4-12	11-13	1.10-1.30	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.49
	12-24	18-28	1.25-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37
	24-34	20-35	1.45-1.70	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37
	34-60	20-35	1.55-1.75	0.2-0.6	0.08-0.15	3.0-5.9	0.0-0.5	.37
146:								
Nard-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	11-13	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	4-12	11-13	1.10-1.30	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.49
	12-24	18-28	1.25-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37
	24-34	20-35	1.45-1.70	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37
	34-60	20-35	1.55-1.75	0.2-0.6	0.08-0.15	3.0-5.9	0.0-0.5	.37
158:								
Kiper-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-10	1.10-1.30	2-6	0.09-0.11	0.0-2.9	1.0-3.0	.15
	4-8	5-10	1.10-1.30	2-6	0.09-0.11	0.0-2.9	0.5-2.0	.20
	8-35	5-10	1.35-1.45	2-6	0.08-0.11	0.0-2.9	0.5-1.0	.20
	35-60	5-10	1.30-1.50	2-6	0.06-0.10	0.0-2.9	0.0-0.5	.10
159:								
Ampad, south slopes---	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-3.0	.20
	5-10	5-10	1.10-1.30	2-6	0.11-0.13	1.0-2.9	0.5-1.0	.28
	10-29	5-10	1.20-1.40	2-6	0.11-0.13	0.0-2.9	0.5-1.0	.28
	29-33	5-10	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.37
	33-43	---	---	---	---	---	---	---
160:								
Cumulic Haploxerolls---	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	20-27	1.15-1.30	0.6-2	0.19-0.21	3.0-5.9	1.0-5.0	.32
	8-53	20-35	1.20-1.40	0.2-0.6	0.16-0.21	3.0-5.9	0.5-3.0	.37
	53-60	20-35	1.25-1.50	0.2-0.6	0.16-0.21	3.0-5.9	0.0-0.5	.43
161:								
Rock outcrop-----	0-60	---	---	---	---	---	---	---
162:								
Hakker-----	0-25	27-35	1.10-1.30	0.2-0.6	0.18-0.20	3.0-5.9	2.0-4.0	.20
	25-44	40-50	1.15-1.35	0.0015-0.06	0.06-0.07	3.0-5.9	0.5-1.0	.10
	44-54	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
163: Nard, north slope----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	11-13	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	4-12	11-13	1.10-1.30	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.49
	12-24	18-28	1.25-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37
	24-34	20-35	1.45-1.70	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37
	34-60	20-35	1.55-1.75	0.2-0.6	0.08-0.15	3.0-5.9	0.0-0.5	.37
164: Nard-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	11-13	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	4-12	11-13	1.10-1.30	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.49
	12-24	18-28	1.25-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37
	24-34	20-35	1.45-1.70	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37
	34-60	20-35	1.55-1.75	0.2-0.6	0.08-0.15	3.0-5.9	0.0-0.5	.37
166: Ampad, warm-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-3.0	.20
	5-10	5-10	1.10-1.30	2-6	0.11-0.13	1.0-2.9	0.5-1.0	.28
	10-29	5-10	1.20-1.40	2-6	0.11-0.13	0.0-2.9	0.5-1.0	.28
	29-33	5-10	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.37
	33-43	---	---	---	---	---	---	---
167: Keechelus, south slopes-----	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-9	15-20	1.10-1.30	0.6-2	0.12-0.14	0.0-2.9	1.0-4.0	.15
	9-22	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	0.5-1.0	.15
	22-35	35-55	1.30-1.40	0.2-0.6	0.08-0.10	3.0-5.9	0.0-1.0	.10
	35-60	35-55	1.30-1.40	0.2-0.6	0.05-0.07	3.0-5.9	0.0-1.0	.10
Nard-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	11-13	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	4-12	11-13	1.10-1.30	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.49
	12-24	18-28	1.25-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37
	24-34	20-35	1.45-1.70	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37
	34-60	20-35	1.55-1.75	0.2-0.6	0.08-0.15	3.0-5.9	0.0-0.5	.37
Kafing, south slopes--	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-4.0	.24
	6-13	15-30	1.10-1.30	0.6-2	0.16-0.20	0.0-2.9	0.5-1.0	.37
	13-24	27-35	1.45-1.60	0.2-0.6	0.13-0.15	3.0-5.9	0.5-1.0	.32
	24-60	27-35	1.55-1.65	0.2-0.6	0.10-0.12	3.0-5.9	0.0-0.5	.32

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
168: Keechelus, north slopes-----	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-9	15-20	1.10-1.30	0.6-2	0.12-0.14	0.0-2.9	1.0-4.0	.15
	9-22	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	0.5-1.0	.15
	22-35	35-55	1.30-1.40	0.2-0.6	0.08-0.10	3.0-5.9	0.0-1.0	.10
	35-60	35-55	1.30-1.40	0.2-0.6	0.05-0.07	3.0-5.9	0.0-1.0	.10
Nard-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	11-13	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	4-12	11-13	1.10-1.30	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.49
	12-24	18-28	1.25-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37
	24-34	20-35	1.45-1.70	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37
	34-60	20-35	1.55-1.75	0.2-0.6	0.08-0.15	3.0-5.9	0.0-0.5	.37
Kafing, north slopes--	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-4.0	.24
	6-13	15-30	1.10-1.30	0.6-2	0.16-0.20	0.0-2.9	0.5-1.0	.37
	13-24	27-35	1.45-1.60	0.2-0.6	0.13-0.15	3.0-5.9	0.5-1.0	.32
	24-60	27-35	1.55-1.65	0.2-0.6	0.10-0.12	3.0-5.9	0.0-0.5	.32
170: Ampad-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-3.0	.20
	5-10	5-10	1.10-1.30	2-6	0.11-0.13	1.0-2.9	0.5-1.0	.28
	10-29	5-10	1.20-1.40	2-6	0.11-0.13	0.0-2.9	0.5-1.0	.28
	29-33	5-10	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.37
	33-43	---	---	---	---	---	---	---
175: Keechelus-----	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-9	15-20	1.10-1.30	0.6-2	0.12-0.14	0.0-2.9	1.0-4.0	.15
	9-22	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	0.5-1.0	.15
	22-35	35-55	1.30-1.40	0.2-0.6	0.08-0.10	3.0-5.9	0.0-1.0	.10
	35-60	35-55	1.30-1.40	0.2-0.6	0.05-0.07	3.0-5.9	0.0-1.0	.10
176: Keechelus, south slopes-----	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-9	15-20	1.10-1.30	0.6-2	0.12-0.14	0.0-2.9	1.0-4.0	.15
	9-22	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	0.5-1.0	.15
	22-35	35-55	1.30-1.40	0.2-0.6	0.08-0.10	3.0-5.9	0.0-1.0	.10
	35-60	35-55	1.30-1.40	0.2-0.6	0.05-0.07	3.0-5.9	0.0-1.0	.10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
177: Keechelus, north slopes-----	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-9	15-20	1.10-1.30	0.6-2	0.12-0.14	0.0-2.9	1.0-4.0	.15
	9-22	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	0.5-1.0	.15
	22-35	35-55	1.30-1.40	0.2-0.6	0.08-0.10	3.0-5.9	0.0-1.0	.10
	35-60	35-55	1.30-1.40	0.2-0.6	0.05-0.07	3.0-5.9	0.0-1.0	.10
180: Nimue-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	5-8	0.60-0.85	0.6-2	0.12-0.14	0.0-2.9	3.0-5.0	.17
	4-7	5-8	0.60-0.85	0.6-2	0.08-0.13	0.0-2.9	10-15	.24
	7-12	5-10	0.60-0.85	0.6-2	0.08-0.13	0.0-2.9	1.0-1.3	.17
	12-26	5-15	1.05-1.35	0.6-2	0.05-0.11	0.0-2.9	3.0-8.0	.10
	26-60	5-15	1.05-1.35	0.6-2	0.04-0.09	0.0-2.9	0.0-2.0	.10
181: Nimue-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	5-8	0.60-0.85	0.6-2	0.12-0.14	0.0-2.9	3.0-5.0	.17
	4-7	5-8	0.60-0.85	0.6-2	0.08-0.13	0.0-2.9	10-15	.24
	7-12	5-10	0.60-0.85	0.6-2	0.08-0.13	0.0-2.9	1.0-1.3	.17
	12-26	5-15	1.05-1.35	0.6-2	0.05-0.11	0.0-2.9	3.0-8.0	.10
	26-60	5-15	1.05-1.35	0.6-2	0.04-0.09	0.0-2.9	0.0-2.0	.10
182: Haywire-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-10	0.60-0.85	2-6	0.10-0.15	0.0-2.9	3.0-5.0	.17
	3-10	5-15	0.60-0.85	0.6-2	0.10-0.17	0.0-2.9	10-15	.43
	10-18	5-15	0.60-0.85	0.6-2	0.10-0.15	0.0-2.9	6.0-10	.24
	18-26	5-15	0.60-0.85	0.6-2	0.10-0.15	0.0-2.9	3.0-5.0	.17
	26-38	5-15	0.80-1.20	0.6-2	0.08-0.15	0.0-2.9	1.0-2.0	.10
	38-48	---	---	---	---	---	---	---
183: Haywire-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-10	0.60-0.85	2-6	0.10-0.15	0.0-2.9	3.0-5.0	.17
	3-10	5-15	0.60-0.85	0.6-2	0.10-0.17	0.0-2.9	10-15	.43
	10-18	5-15	0.60-0.85	0.6-2	0.10-0.15	0.0-2.9	6.0-10	.24
	18-26	5-15	0.60-0.85	0.6-2	0.10-0.15	0.0-2.9	3.0-5.0	.17
	26-38	5-15	0.80-1.20	0.6-2	0.08-0.15	0.0-2.9	1.0-2.0	.10
	38-48	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
185: Andic Dystrocrepts---	0-5	5-10	0.85-1.00	2-6	0.12-0.18	0.0-2.9	2.0-5.0	.10
	5-11	5-10	0.85-1.00	2-6	0.08-0.12	0.0-2.9	1.0-3.0	.10
	11-26	5-10	1.20-1.40	2-6	0.03-0.07	0.0-2.9	0.5-2.0	.05
	26-36	---	---	---	---	---	---	---
186: Stirrup-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.60-0.85	2-6	0.11-0.14	0.0-2.9	3.0-5.0	.15
	4-8	5-15	0.60-0.85	2-6	0.08-0.17	0.0-2.9	10-15	.10
	8-24	5-15	0.60-0.85	2-6	0.08-0.12	0.0-2.9	6.0-10	.15
	24-36	5-19	0.60-0.85	2-6	0.04-0.08	0.0-2.9	2.0-5.0	.05
	36-43	15-23	1.30-1.45	2-6	0.03-0.05	0.0-2.9	0.5-2.0	.02
	43-53	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
187: Chinkmin-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-5	5-10	0.60-0.85	2-6	0.11-0.14	0.0-2.9	3.0-5.0	.17
	5-11	5-15	0.60-0.85	0.6-2	0.11-0.16	0.0-2.9	10-14	.20
	11-16	5-15	0.60-0.85	0.6-2	0.11-0.16	0.0-2.9	6.0-14	.28
	16-23	5-15	0.70-0.90	0.6-2	0.07-0.12	0.0-2.9	3.0-5.0	.10
	23-33	5-15	0.70-0.90	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.10
	33-41	---	---	0.01-0.06	0.00-0.00	---	---	---
188: Chinkmin-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-5	5-10	0.60-0.85	2-6	0.11-0.14	0.0-2.9	3.0-5.0	.17
	5-11	5-15	0.60-0.85	0.6-2	0.11-0.16	0.0-2.9	10-14	.20
	11-16	5-15	0.60-0.85	0.6-2	0.11-0.16	0.0-2.9	6.0-14	.28
	16-23	5-15	0.70-0.90	0.6-2	0.07-0.12	0.0-2.9	3.0-5.0	.10
	23-33	5-15	0.70-0.90	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.10
	33-41	---	---	0.01-0.06	0.00-0.00	---	---	---
190: Nimue-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-4	5-8	0.60-0.85	0.6-2	0.12-0.14	0.0-2.9	3.0-5.0	.17
	4-7	5-8	0.60-0.85	0.6-2	0.08-0.13	0.0-2.9	10-15	.24
	7-12	5-10	0.60-0.85	0.6-2	0.08-0.13	0.0-2.9	1.0-1.3	.17
	12-26	5-15	1.05-1.35	0.6-2	0.05-0.11	0.0-2.9	3.0-8.0	.10
	26-60	5-15	1.05-1.35	0.6-2	0.04-0.09	0.0-2.9	0.0-2.0	.10
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
191: Sutkin-----	0-1 1-11 11-39 39-60	0-25 15-25 18-27 20-30	0.10-0.30 1.15-1.30 1.20-1.40 1.30-1.45	6-100 0.6-2 0.6-2 0.6-2	0.30-0.60 0.12-0.15 0.11-0.13 0.09-0.12	--- 0.0-2.9 0.0-2.9 0.0-2.9	60-95 1.0-2.0 0.5-1.0 0.0-0.5	--- .17 .10 .05
194: Osborn-----	0-1 1-9 9-16 16-33 33-42	0-25 5-10 5-15 5-15 ---	0.10-0.30 0.75-1.00 1.30-1.40 1.30-1.40 ---	6-100 2-6 2-6 2-6 ---	0.30-0.60 0.11-0.15 0.14-0.18 0.14-0.18 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 1.0-3.0 0.5-1.0 0.0-0.5 ---	--- .20 .28 .37 ---
Scotties-----	0-1 1-11 11-19 19-31 31-45 45-49	0-25 5-8 10-18 10-18 5-10 ---	0.10-0.30 0.85-1.00 0.85-1.10 1.10-1.35 1.25-1.50 ---	6-100 2-6 0.6-2 0.6-2 2-20 ---	0.30-0.60 0.08-0.12 0.07-0.14 0.07-0.11 0.01-0.03 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 1.0-3.0 0.5-1.0 0.0-0.5 0.0-0.5 ---	--- .24 .17 .17 .10 ---
Chapot-----	0-1 1-7 7-15 15-25 25-60	0-25 5-15 10-18 22-25 25-30	0.10-0.30 1.10-1.30 1.10-1.30 1.30-1.50 1.30-1.50	6-100 2-6 0.6-2 0.6-2 0.2-0.6	0.30-0.60 0.09-0.11 0.09-0.15 0.05-0.10 0.07-0.09	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 2.0-3.0 0.5-1.0 0.5-1.0 0.0-0.5	--- .10 .24 .05 .05
195: Scotties-----	0-1 1-11 11-19 19-31 31-45 45-49	0-25 5-8 10-18 10-18 5-10 ---	0.10-0.30 0.85-1.00 0.85-1.10 1.10-1.35 1.25-1.50 ---	6-100 2-6 0.6-2 0.6-2 2-20 ---	0.30-0.60 0.08-0.12 0.07-0.14 0.07-0.11 0.01-0.03 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 1.0-3.0 0.5-1.0 0.0-0.5 0.0-0.5 ---	--- .24 .17 .17 .10 ---
Chapot-----	0-1 1-7 7-15 15-25 25-60	0-25 5-15 10-18 22-25 25-30	0.10-0.30 1.10-1.30 1.10-1.30 1.30-1.50 1.30-1.50	6-100 2-6 0.6-2 0.6-2 0.2-0.6	0.30-0.60 0.09-0.11 0.09-0.15 0.05-0.10 0.07-0.09	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 2.0-3.0 0.5-1.0 0.5-1.0 0.0-0.5	--- .10 .24 .05 .05
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
201: Roslyn								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-15	0.85-1.00	2-6	0.10-0.13	0.0-2.9	0.5-2.0	.24
	8-15	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.28
	15-37	13-20	1.25-1.40	0.6-2	0.12-0.17	0.0-2.9	0.5-1.0	.37
	37-49	5-15	1.20-1.35	0.6-2	0.07-0.14	0.0-2.9	0.5-1.0	.32
	49-60	5-15	1.30-1.50	0.6-2	0.07-0.14	0.0-2.9	0.0-0.5	.24
203: Teanaway								
	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-7	10-13	1.20-1.40	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.37
	7-22	10-13	1.35-1.55	0.6-2	0.18-0.21	0.0-2.9	0.5-2.0	.43
	22-42	17-30	1.55-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.37
	42-51	18-30	1.55-1.70	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.43
	51-60	25-35	1.55-1.75	0.06-0.2	0.08-0.10	3.0-5.9	0.0-0.5	.24
204: Teanaway								
	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-7	10-13	1.20-1.40	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.37
	7-22	10-13	1.35-1.55	0.6-2	0.18-0.21	0.0-2.9	0.5-2.0	.43
	22-42	17-30	1.55-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.37
	42-51	18-30	1.55-1.70	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.43
	51-60	25-35	1.55-1.75	0.06-0.2	0.08-0.10	3.0-5.9	0.0-0.5	.24
205: Xerofluvents								
	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-20	5-10	1.40-1.50	2-6	0.10-0.13	0.0-2.9	1.0-3.0	.20
	20-23	0-2	1.50-1.60	6-20	0.05-0.08	0.0-2.9	0.5-2.0	.24
	23-60	0-2	1.50-1.70	20-100	0.01-0.05	0.0-2.9	0.0-0.5	.02
206: Dystroxerepts, south slopes								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-7	5-10	0.85-1.10	2-6	0.11-0.14	0.0-2.9	0.5-2.0	.20
	7-18	5-25	1.10-1.25	0.6-6	0.08-0.11	0.0-2.9	0.0-1.0	.20
	18-60	2-25	1.15-1.30	0.6-6	0.05-0.09	0.0-2.9	0.0-0.5	.05
207: Quicksell								
	0-5	20-27	1.10-1.25	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.28
	5-20	20-30	1.15-1.35	0.6-2	0.19-0.20	0.0-2.9	0.5-2.0	.37
	20-43	45-55	1.25-1.45	0.0015-0.2	0.08-0.10	3.0-5.9	0.0-1.0	.24
	43-60	35-45	1.25-1.50	0.06-0.2	0.02-0.03	3.0-5.9	0.0-0.5	.28

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
208:								
Patnish-----	0-7	15-25	1.15-1.40	0.6-2	0.16-0.19	0.0-2.9	2.0-4.0	.24
	7-14	18-27	1.15-1.40	0.6-2	0.11-0.18	0.0-2.9	2.0-3.0	.32
	14-27	18-27	1.25-1.45	0.6-2	0.11-0.18	0.0-2.9	1.0-3.0	.32
	27-35	14-22	1.30-1.50	2-6	0.06-0.11	0.0-2.9	0.5-1.0	.05
	35-60	8-14	1.50-1.70	6-20	0.02-0.05	0.0-2.9	0.0-0.5	.02
Mippon-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-12	7-15	1.10-1.35	0.6-2	0.08-0.10	0.0-2.9	1.0-5.0	.10
	12-18	2-10	1.20-1.50	20-100	0.06-0.08	0.0-2.9	0.0-1.0	.10
	18-60	0-5	1.45-1.65	20-100	0.03-0.06	0.0-2.9	0.0-0.5	.05
Myzel-----	0-6	27-33	1.15-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.15
	6-22	27-33	1.15-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.20
	22-38	27-33	1.15-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.20
	38-57	27-35	1.25-1.40	0.2-0.6	0.16-0.21	3.0-5.9	0.5-2.0	.20
	57-60	27-35	1.25-1.45	0.2-0.6	0.09-0.20	3.0-5.9	0.0-2.0	.20
210:								
Dystroxerepts-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-7	8-18	0.85-1.10	0.6-2	0.09-0.12	0.0-2.9	0.5-2.0	.15
	7-18	5-25	1.10-1.25	0.6-6	0.08-0.11	0.0-2.9	0.0-1.0	.20
	18-60	2-25	1.15-1.30	0.6-6	0.05-0.09	0.0-2.9	0.0-0.5	.05
211:								
Teanaway-----	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-7	10-13	1.20-1.40	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.37
	7-22	10-13	1.35-1.55	0.6-2	0.18-0.21	0.0-2.9	0.5-2.0	.43
	22-42	17-30	1.55-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.37
	42-51	18-30	1.55-1.70	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.43
	51-60	25-35	1.55-1.75	0.06-0.2	0.08-0.10	3.0-5.9	0.0-0.5	.24
213:								
Roslyn, moist-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-15	0.85-1.00	2-6	0.10-0.13	0.0-2.9	0.5-2.0	.24
	8-15	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.28
	15-37	13-20	1.25-1.40	0.6-2	0.12-0.17	0.0-2.9	0.5-1.0	.37
	37-60	13-27	1.50-1.70	0.6-2	0.10-0.16	0.0-2.9	0.0-0.5	.20
214:								
Haplosaprists-----	0-8	10-35	0.10-0.30	0.6-2	0.50-0.70	---	40-90	---
	8-20	10-35	0.10-0.30	0.6-2	0.50-0.70	---	40-90	---
	20-43	10-35	0.10-0.30	0.6-2	0.50-0.70	---	40-90	---
	43-60	10-35	1.30-1.75	0.2-2	0.10-0.20	3.0-5.9	2.0-4.0	.37

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
216: Roxer-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	0.5-2.0	.15
	8-33	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.20
	33-44	5-15	1.20-1.35	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.24
	44-60	5-15	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.24
217: Roxer-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	0.5-2.0	.15
	8-33	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.20
	33-44	5-15	1.20-1.35	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.24
	44-60	5-15	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.24
218: Bograp-----	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-12	5-15	1.10-1.30	2-6	0.10-0.15	0.0-2.9	1.0-3.0	.20
	12-19	5-18	1.20-1.35	0.6-2	0.10-0.18	0.0-2.9	0.5-1.0	.49
	19-28	15-25	1.25-1.40	0.6-2	0.10-0.16	0.0-2.9	0.5-1.0	.24
	28-64	27-35	1.25-1.40	0.2-0.6	0.10-0.19	0.0-2.9	0.0-0.8	.17
220: Roxer, basalt substratum-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	0.5-2.0	.15
	8-33	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.20
	33-44	5-15	1.20-1.35	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.24
	44-51	---	---	---	---	---	---	---
Roxer-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.10	2-6	0.09-0.12	0.0-2.9	0.5-2.0	.15
	8-33	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.20
	33-44	5-15	1.20-1.35	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.24
	44-60	5-15	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.20
222: Anpad, north slopes---	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-3.0	.20
	5-10	5-10	1.10-1.30	2-6	0.11-0.13	1.0-2.9	0.5-1.0	.28
	10-29	5-10	1.20-1.40	2-6	0.11-0.13	0.0-2.9	0.5-1.0	.24
	29-33	5-10	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.37
	33-43	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
226: Bograp	0-4 4-12 12-19 19-28 28-64	0-25 5-15 5-18 15-25 27-35	0.10-0.30 1.10-1.30 1.20-1.35 1.25-1.40 1.25-1.40	6-100 2-6 0.6-2 0.6-2 0.2-0.6	0.30-0.60 0.10-0.15 0.10-0.18 0.10-0.16 0.10-0.19	---	60-95 1.0-3.0 0.5-1.0 0.5-1.0 0.0-0.8	---
227: Jummer	0-1 1-4 4-7 7-21 21-34 34-44	0-25 5-10 5-10 5-10 15-26 ---	0.10-0.30 1.15-1.30 1.10-1.30 1.10-1.30 1.25-1.45 ---	6-100 2-6 2-6 2-6 0.6-2 ---	0.30-0.60 0.07-0.10 0.06-0.12 0.07-0.10 0.03-0.05 ---	---	60-95 2.0-4.0 0.5-1.0 0.5-1.0 0.0-0.5 ---	---
Jumpmore	0-1 1-5 5-14 14-30 30-60	0-25 10-14 10-14 10-14 18-29	0.10-0.30 1.10-1.30 1.10-1.30 1.25-1.45 1.25-1.45	6-100 0.6-2 0.6-2 0.6-2 0.6-2	0.30-0.60 0.12-0.16 0.07-0.14 0.07-0.12 0.03-0.09	---	60-95 1.0-4.0 0.5-1.0 0.5-1.0 0.0-0.5	---
Rock outcrop	0-60	---	---	---	---	---	---	---
228: Natkim	0-1 1-8 8-40 40-60	0-25 5-8 5-15 5-15	0.10-0.30 0.85-1.10 0.85-1.10 1.20-1.40	6-100 2-6 2-6 2-6	0.30-0.60 0.09-0.11 0.06-0.11 0.06-0.10	---	60-95 1.0-4.0 0.5-1.0 0.0-0.5	---
229: Natkim	0-1 1-8 8-40 40-60	0-25 5-8 5-15 5-15	0.10-0.30 0.85-1.10 0.85-1.10 1.20-1.40	6-100 2-6 2-6 2-6	0.30-0.60 0.09-0.11 0.06-0.11 0.06-0.10	---	60-95 1.0-4.0 0.5-1.0 0.0-0.5	---
230: Rock outcrop	0-60	---	---	---	---	---	---	---
Roxer	0-1 1-8 8-33 33-44 44-60	0-25 5-10 5-15 5-15 5-15	0.10-0.30 0.85-1.00 0.85-1.10 1.20-1.35 1.25-1.45	6-100 2-6 0.6-2 0.6-2 0.6-2	0.30-0.60 0.09-0.12 0.10-0.13 0.07-0.12 0.07-0.12	---	60-95 0.5-2.0 0.5-1.0 0.5-1.0 0.0-0.5	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
232: Vabus	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.09-0.13	0.0-2.9	2.0-5.0	.05
	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
233: Natkim	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-8	0.85-1.10	2-6	0.09-0.11	0.0-2.9	1.0-4.0	.10
	8-40	5-15	0.85-1.10	2-6	0.06-0.11	0.0-2.9	0.5-1.0	.10
	40-60	5-15	1.20-1.40	2-6	0.06-0.10	0.0-2.9	0.0-0.5	.05
234: Kladnick	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.85-1.00	2-6	0.12-0.13	0.0-2.9	0.5-3.0	.20
	9-15	5-10	0.85-1.00	2-6	0.09-0.11	0.0-2.9	0.5-1.0	.15
	15-24	0-5	1.10-1.35	6-20	0.05-0.08	0.0-2.9	0.0-1.0	.10
	24-60	0-5	1.30-1.55	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02
237: Kladnick	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.85-1.00	2-6	0.12-0.13	0.0-2.9	0.5-3.0	.20
	9-15	5-10	0.85-1.00	2-6	0.09-0.11	0.0-2.9	0.5-1.0	.15
	15-24	0-5	1.10-1.35	6-20	0.05-0.08	0.0-2.9	0.0-1.0	.10
	24-60	0-5	1.30-1.55	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02
238: Racker	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-10	0.85-1.00	2-6	0.12-0.14	0.0-2.9	1.0-2.0	.20
	5-12	5-10	0.85-1.00	2-6	0.08-0.11	0.0-2.9	0.5-1.0	.15
	12-31	0-5	1.40-1.55	6-20	0.05-0.08	0.0-2.9	0.0-0.5	.10
	31-60	0-5	1.45-1.55	6-20	0.03-0.05	0.0-2.9	0.0-0.5	.10
241: Thetis	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-6	5-8	0.85-1.00	2-6	0.12-0.15	0.0-2.9	2.0-3.0	.20
	6-12	5-15	0.85-1.00	2-6	0.12-0.15	0.0-2.9	6.0-10	.10
	12-48	5-15	0.85-1.10	2-6	0.07-0.09	0.0-2.9	0.5-4.0	.10
	48-60	5-10	1.40-1.50	2-6	0.05-0.07	0.0-2.9	0.0-0.5	.10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
242: Roxer-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.10	2-6	0.09-0.12	0.0-2.9	0.5-2.0	.15
	8-33	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.20
	33-44	5-15	1.20-1.35	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.24
	44-60	5-15	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.24
251: Domerie, stony surface	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.85-1.10	2-6	0.08-0.12	0.0-2.9	2.0-4.0	.10
	4-9	8-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	1.0-2.0	.10
	9-34	8-15	0.85-1.10	2-6	0.05-0.09	0.0-2.9	0.5-2.0	.10
	34-41	8-15	0.85-1.10	2-6	0.03-0.07	0.0-2.9	0.5-1.0	.05
	41-56	8-16	1.20-1.40	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05
	56-60	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
252: Domerie, south slopes, stony surface	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.85-1.10	2-6	0.08-0.12	0.0-2.9	2.0-4.0	.10
	4-9	8-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	1.0-2.0	.10
	9-34	8-15	0.85-1.10	2-6	0.05-0.09	0.0-2.9	0.5-2.0	.10
	34-41	8-15	0.85-1.10	2-6	0.03-0.07	0.0-2.9	0.5-1.0	.05
	41-56	8-16	1.20-1.40	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05
	56-60	---	---	---	---	---	---	---
253: Domerie, north slopes, stony surface	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.85-1.10	2-6	0.08-0.12	0.0-2.9	2.0-4.0	.10
	4-9	8-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	1.0-2.0	.10
	9-34	8-15	0.85-1.10	2-6	0.05-0.09	0.0-2.9	0.5-2.0	.10
	34-41	8-15	0.85-1.10	2-6	0.03-0.07	0.0-2.9	0.5-1.0	.05
	41-56	8-16	1.20-1.40	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05
	56-60	---	---	---	---	---	---	---
254: Kachess-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-10	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	6.0-10	.10
	10-30	7-15	0.85-1.10	0.6-2	0.08-0.13	0.0-2.9	1.0-3.0	.17
	30-60	0-10	0.85-1.10	2-6	0.01-0.05	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
255: Thetis-----	0-2 2-6 6-12 12-48 48-60	0-25 5-8 5-15 5-15 5-10	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 1.40-1.50	6-100 2-6 2-6 2-6 2-6	0.30-0.60 0.12-0.15 0.12-0.15 0.07-0.09 0.05-0.07	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 2.0-3.0 6.0-10 0.5-4.0 0.0-0.5	--- .20 .10 .10 .10
259: Fluvaquents-----	0-1 1-9 9-18 18-60	0-25 10-27 5-15 0-15	0.10-0.30 1.10-1.30 1.30-1.50 1.35-1.60	6-100 0.6-2 0.6-2 6-20	0.30-0.60 0.19-0.21 0.07-0.19 0.01-0.07	--- 0.0-2.9 0.0-2.9 0.0-2.9	60-95 1.0-5.0 0.5-2.0 0.0-1.0	--- .32 .17 .05
262: Roslyn, clay loam subsoil-----	0-1 1-8 8-15 15-31 31-60	0-25 5-15 5-15 13-20 27-30	0.10-0.30 0.85-1.00 0.85-1.10 1.25-1.40 1.50-1.70	6-100 2-6 0.6-2 0.6-2 0.2-0.6	0.30-0.60 0.10-0.13 0.10-0.13 0.12-0.17 0.15-0.19	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 0.5-2.0 0.5-1.0 0.5-1.0 0.0-0.5	--- .24 .28 .43 .24
263: Volperie-----	0-1 1-8 8-16 16-38 38-48	0-25 5-10 5-15 5-15 ---	0.10-0.30 0.85-1.00 0.85-1.10 1.20-1.40 ---	6-100 2-6 2-6 2-6 ---	0.30-0.60 0.10-0.12 0.08-0.10 0.06-0.09 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 1.0-2.0 0.5-1.0 0.5-1.0 ---	--- .20 .43 .20 ---
264: Volperie-----	0-1 1-8 8-16 16-38 38-48	0-25 5-10 5-15 5-15 ---	0.10-0.30 0.85-1.00 0.85-1.10 1.20-1.40 ---	6-100 2-6 2-6 2-6 ---	0.30-0.60 0.10-0.12 0.08-0.10 0.06-0.09 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 1.0-2.0 0.5-1.0 0.5-1.0 ---	--- .20 .43 .20 ---
265: Volperie, warm-----	0-1 1-8 8-16 16-38 38-48	0-25 5-10 5-15 5-15 ---	0.10-0.30 0.85-1.00 0.85-1.10 1.20-1.40 ---	6-100 2-6 2-6 2-6 ---	0.30-0.60 0.10-0.12 0.08-0.10 0.06-0.09 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 1.0-2.0 0.5-1.0 0.5-1.0 ---	--- .20 .43 .20 ---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
266: Volperie, north slopes	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.00	2-6	0.10-0.12	0.0-2.9	1.0-2.0	.20
	8-16	5-15	0.85-1.10	2-6	0.08-0.10	0.0-2.9	0.5-1.0	.43
	16-38	5-15	1.20-1.40	2-6	0.06-0.09	0.0-2.9	0.5-1.0	.20
	38-48	---	---	---	---	---	---	---
267: Esmeralda, moist-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	7-15	0.85-1.10	0.6-2	0.11-0.13	0.0-2.9	2.0-8.0	.15
	3-10	5-15	0.85-1.10	2-6	0.08-0.14	0.0-2.9	3.0-6.0	.10
	10-44	5-15	0.85-1.10	2-6	0.06-0.10	0.0-2.9	0.5-1.0	.10
	44-60	5-10	1.00-1.40	6-20	0.04-0.05	0.0-2.9	0.0-0.5	.05
268: Vitricryands-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-9	5-10	0.85-1.10	2-6	0.05-0.08	0.0-2.9	3.0-6.0	.05
	9-37	5-15	0.85-1.10	0.6-6	0.03-0.15	0.0-2.9	0.5-2.0	.10
	37-47	---	---	---	---	---	---	---
270: Roxer-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	0.5-2.0	.15
	8-33	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.20
	33-44	5-15	1.20-1.35	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.24
	44-60	5-15	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.24
Deroux-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-9	5-8	0.85-1.00	6-20	0.04-0.05	0.0-2.9	0.5-3.0	.10
	9-12	5-10	0.85-1.00	2-6	0.04-0.05	0.0-2.9	0.5-1.0	.15
	12-25	5-10	1.35-1.50	2-6	0.03-0.04	0.0-2.9	0.5-1.0	.15
	25-35	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
271: Roxer-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-8	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	0.5-2.0	.15
	8-33	5-15	0.85-1.10	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.20
	33-44	5-15	1.20-1.35	0.6-2	0.07-0.12	0.0-2.9	0.5-1.0	.24
	44-60	5-15	1.25-1.45	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.24

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
271: Deroux-----	0-2 2-9 9-12 12-25 25-35	0-25 5-8 5-10 5-10 ---	0.10-0.30 0.85-1.00 0.85-1.00 1.35-1.50 ---	6-100 6-20 2-6 2-6 ---	0.30-0.60 0.04-0.05 0.04-0.05 0.03-0.04 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 0.5-3.0 0.5-1.0 0.5-1.0 ---	---
272: Andic Dystrocrepts---	0-1 1-14 14-17 17-33 33-43	0-25 5-10 5-15 5-15 ---	0.10-0.30 0.85-1.10 0.85-1.10 1.20-1.40 ---	6-100 2-6 2-6 2-6 ---	0.30-0.60 0.05-0.09 0.03-0.08 0.03-0.08 ---	--- 0.0-2.9 0.0-2.9 0.0-2.9 ---	60-95 2.0-4.0 0.5-2.0 0.5-1.0 ---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
280: Esmeralda-----	0-1 1-3 3-10 10-44 44-60	0-25 7-15 5-15 5-15 5-10	0.10-0.30 0.85-1.10 0.85-1.10 0.85-1.10 1.00-1.40	6-100 0.6-2 2-6 2-6 6-20	0.30-0.60 0.11-0.13 0.08-0.14 0.06-0.10 0.04-0.05	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 2.0-8.0 3.0-6.0 0.5-1.0 0.0-0.5	---
281: Vanepps-----	0-1 1-9 9-29 29-38	0-25 5-10 5-15 ---	0.10-0.30 0.85-1.00 0.85-1.00 ---	6-100 2-6 2-6 ---	0.30-0.60 0.07-0.08 0.05-0.09 ---	--- 0.0-2.9 0.0-2.9 ---	60-95 3.0-5.0 1.0-3.0 ---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
284: Esmeralda, bouldery surface-----	0-1 1-3 3-10 10-44 44-60	0-25 7-15 5-15 5-15 5-10	0.10-0.30 0.85-1.10 0.85-1.10 0.85-1.10 1.00-1.40	6-100 0.6-2 2-6 2-6 6-20	0.30-0.60 0.11-0.13 0.08-0.14 0.06-0.10 0.04-0.05	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 2.0-8.0 3.0-6.0 0.5-1.0 0.0-0.5	---
290: Andic Dystrocrepts---	0-5 5-11 11-26 26-36	5-15 5-10 5-10 ---	0.85-1.00 0.85-1.00 1.20-1.40 ---	2-6 2-6 2-6 ---	0.05-0.13 0.08-0.12 0.03-0.07 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	2.0-5.0 1.0-3.0 0.5-2.0 ---	.05 .10 .05 ---
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
301: Vabus	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.11-0.13	0.0-2.9	2.0-5.0	.17
	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
302: Vabus	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.11-0.13	0.0-2.9	2.0-5.0	.17
	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
304: Madrak	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-10	5-15	0.85-1.10	0.6-2	0.13-0.16	0.0-2.9	0.5-3.0	.28
	10-19	5-15	0.85-1.10	2-6	0.06-0.09	0.0-2.9	0.5-1.0	.10
	19-30	5-10	0.85-1.10	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.15
	30-39	---	---	---	---	---	---	---
306: Vabus	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.10-0.12	0.0-2.9	2.0-5.0	.10
	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
308: Vabus	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.10-0.12	0.0-2.9	2.0-5.0	.10
	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
309: Vabus	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.11-0.13	0.0-2.9	2.0-5.0	.17
	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
313: Vabus-----	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.10-0.12	0.0-2.9	2.0-5.0	.10
	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
315: Lemah-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-3	5-8	0.85-1.10	2-6	0.06-0.10	0.0-2.9	3.0-6.0	.05
	3-9	5-10	0.85-1.10	2-6	0.06-0.10	0.0-2.9	3.0-6.0	.05
	9-37	5-10	0.85-1.10	6-20	0.06-0.10	0.0-2.9	0.5-1.0	.05
	37-60	5-10	1.30-1.50	6-20	0.04-0.08	0.0-2.9	0.0-0.5	.05
	0-60	---	---	---	---	---	---	---
316: Cryorthents-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	5-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	0.5-2.0	.10
	5-21	5-15	0.85-1.10	2-6	0.04-0.09	0.0-2.9	0.5-2.0	.10
	21-27	0-10	1.35-1.60	6-20	0.02-0.08	0.0-2.9	0.5-1.0	.10
	27-60	0-10	1.40-1.60	6-20	0.01-0.05	0.0-2.9	0.0-0.5	.05
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
317: Ronsel-----	1-4	5-8	0.85-1.00	2-6	0.12-0.14	0.0-2.9	2.0-3.0	.20
	4-9	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	6.0-10	.10
	9-18	5-10	0.85-1.10	2-6	0.07-0.11	0.0-2.9	2.0-4.0	.10
	18-60	0-5	1.30-1.50	2-6	0.07-0.09	0.0-2.9	0.5-2.0	.10
	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.09-0.13	0.0-2.9	2.0-5.0	.05
318: Vabus-----	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.09-0.13	0.0-2.9	2.0-5.0	.05
319: Vabus, south slopes---	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.10
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05
	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.09-0.13	0.0-2.9	2.0-5.0	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
320: Vabus-----	0-4 4-7 7-13 13-18 18-35 35-60	0-25 5-8 5-10 5-10 5-15 5-15	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 0.85-1.10 1.65-1.90	6-100 2-6 2-6 2-6 2-6 0.0015-0.06	0.30-0.60 0.09-0.13 0.11-0.13 0.08-0.10 0.05-0.07 0.00-0.00	---	60-95 2.0-5.0 6.0-10 3.0-5.0 2.0-4.0 0.0-0.5	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
321: Andic Dystrocrepts, avalanche chute-----	0-5 5-11 11-60	5-10 5-10 5-10	0.85-1.00 0.85-1.00 1.20-1.40	2-6 2-6 2-6	0.12-0.18 0.08-0.12 0.03-0.07	0.0-2.9 0.0-2.9 0.0-2.9	2.0-5.0 1.0-3.0 0.5-2.0	.10 .10 .05
Andic Haplocryods-----	0-2 2-4 4-14 14-24 24-60	0-25 5-10 5-15 5-15 5-15	0.10-0.30 0.85-1.10 0.70-0.90 0.70-0.90 1.20-1.45	6-100 2-6 0.6-6 2-6 2-6	0.30-0.60 0.10-0.13 0.04-0.11 0.04-0.08 0.04-0.08	---	60-95 2.0-5.0 3.0-10 1.0-2.0 0.5-1.0	.28 .10 .24 .15 .15
Rock outcrop-----	0-60	---	---	---	---	---	---	---
322: Vabus-----	0-4 4-7 7-13 13-18 18-35 35-60	0-25 5-8 5-10 5-10 5-15 5-15	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 0.85-1.10 1.65-1.90	6-100 2-6 2-6 2-6 2-6 0.0015-0.06	0.30-0.60 0.09-0.13 0.11-0.13 0.08-0.10 0.05-0.07 0.00-0.00	---	60-95 2.0-5.0 6.0-10 3.0-5.0 2.0-4.0 0.0-0.5	---
323: Cryorthents, cool-----	0-1 1-8 8-17 17-60	0-25 10-15 0-5 0-5	0.10-0.30 1.10-1.30 1.40-1.60 1.40-1.60	6-100 0.6-2 6-20 6-20	0.30-0.60 0.10-0.14 0.01-0.03 0.01-0.03	---	60-95 1.0-3.0 0.5-1.0 0.0-1.0	---
324: Ronsel-----	0-1 1-4 4-9 9-18 18-60	0-25 5-8 5-10 5-10 0-5	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 1.30-1.50	6-100 2-6 2-6 2-6 2-6	0.30-0.60 0.11-0.12 0.09-0.12 0.07-0.11 0.07-0.09	---	60-95 2.0-3.0 6.0-10 2.0-4.0 0.5-2.0	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
328: Cryofluvents-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-7	5-10	0.85-1.20	2-6	0.06-0.10	0.0-2.9	1.0-3.0	.10
	7-13	5-10	0.85-1.25	2-6	0.04-0.09	0.0-2.9	0.5-2.0	.05
	13-60	0-10	1.40-1.60	2-20	0.02-0.05	0.0-2.9	0.0-1.5	.05
Dystrocryepts-----	0-2	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	2-12	5-15	0.85-1.20	2-6	0.10-0.13	0.0-2.9	0.5-2.0	.20
	12-29	5-10	0.85-1.25	2-6	0.03-0.06	0.0-2.9	0.5-1.0	.10
	29-60	0-5	1.40-1.60	20-20	0.01-0.03	0.0-2.9	0.0-0.5	.02
332: Stirrup-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.60-0.85	2-6	0.11-0.14	0.0-2.9	3.0-5.0	.15
	4-8	5-15	0.60-0.85	2-6	0.08-0.17	0.0-2.9	10-15	.10
	8-24	5-15	0.60-0.85	2-6	0.08-0.12	0.0-2.9	6.0-10	.15
	24-36	5-19	0.60-0.85	2-6	0.04-0.08	0.0-2.9	2.0-5.0	.02
333: Stirrup-----	36-43	15-23	1.30-1.45	2-6	0.03-0.05	0.0-2.9	0.5-2.0	.02
	43-53	---	---	---	---	---	---	---
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.60-0.85	2-6	0.11-0.14	0.0-2.9	3.0-5.0	.15
334: Stirrup-----	4-8	5-15	0.60-0.85	2-6	0.08-0.17	0.0-2.9	10-15	.10
	8-24	5-15	0.60-0.85	2-6	0.08-0.12	0.0-2.9	6.0-10	.15
	24-36	5-19	0.60-0.85	2-6	0.04-0.08	0.0-2.9	2.0-5.0	.02
	36-43	15-23	1.30-1.45	2-6	0.03-0.05	0.0-2.9	0.5-2.0	.02
	43-53	---	---	---	---	---	---	---
335: Vabus-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.60-0.85	2-6	0.11-0.14	0.0-2.9	3.0-5.0	.15
	4-8	5-15	0.60-0.85	2-6	0.08-0.17	0.0-2.9	10-15	.10
	8-24	5-15	0.60-0.85	2-6	0.08-0.12	0.0-2.9	6.0-10	.15
	24-36	5-19	0.60-0.85	2-6	0.04-0.08	0.0-2.9	2.0-5.0	.02
336: Vabus-----	36-43	15-23	1.30-1.45	2-6	0.03-0.05	0.0-2.9	0.5-2.0	.02
	43-53	---	---	---	---	---	---	---
	0-4	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	4-7	5-8	0.85-1.00	2-6	0.10-0.12	0.0-2.9	2.0-5.0	.10
337: Vabus-----	7-13	5-10	0.85-1.00	2-6	0.11-0.13	0.0-2.9	6.0-10	.20
	13-18	5-10	0.85-1.10	2-6	0.08-0.10	0.0-2.9	3.0-5.0	.05
	18-35	5-15	0.85-1.10	2-6	0.05-0.07	0.0-2.9	2.0-4.0	.05
	35-60	5-15	1.65-1.90	0.0015-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
335: Rock outcrop-----	0-60	---	---	---	---	---	---	Kw
336: Ronsel-----	0-1 1-4 4-9 9-18 18-60	0-25 5-8 5-10 5-10 0-5	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 1.30-1.50	6-100 2-6 2-6 2-6 2-6	0.30-0.60 0.10-0.12 0.09-0.12 0.07-0.11 0.07-0.09	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 2.0-3.0 6.0-10 2.0-4.0 0.5-2.0	--- .10 .10 .10 .10
338: Gilpar-----	0-2 2-3 3-9 9-21 21-35 35-60	0-25 5-10 5-10 5-15 5-15 5-15	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 0.85-1.10	6-100 2-6 2-6 0.6-2 0.6-2 0.6-2	0.30-0.60 0.12-0.15 0.12-0.15 0.10-0.12 0.08-0.10 0.08-0.10	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 5.0-10 5.0-10 1.0-4.0 0.5-1.0 0.0-0.5	--- .17 .24 .24 .17 .17
346: Gilpar-----	0-2 2-3 3-9 9-21 21-35 35-60	0-25 5-10 5-10 5-15 5-15 5-15	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 0.85-1.10	6-100 2-6 2-6 0.6-2 0.6-2 0.6-2	0.30-0.60 0.12-0.15 0.12-0.15 0.10-0.12 0.08-0.10 0.08-0.10	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 5.0-10 5.0-10 1.0-4.0 0.5-1.0 0.0-0.5	--- .17 .24 .24 .17 .17
347: Gilpar-----	0-2 2-3 3-9 9-21 21-35 35-60	0-25 5-10 5-10 5-15 5-15 5-15	0.10-0.30 0.85-1.00 0.85-1.00 0.85-1.10 0.85-1.10	6-100 2-6 2-6 0.6-2 0.6-2 0.6-2	0.30-0.60 0.12-0.15 0.12-0.15 0.10-0.12 0.08-0.10 0.08-0.10	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 5.0-10 5.0-10 1.0-4.0 0.5-1.0 0.0-0.5	--- .17 .24 .24 .17 .17
402: Esmeralda, bouldery surface-----	0-1 1-3 3-10 10-44 44-60	0-25 7-15 5-15 5-15 5-10	0.10-0.30 0.85-1.10 0.85-1.10 0.85-1.10 1.00-1.40	6-100 0.6-2 2-6 2-6 6-20	0.30-0.60 0.11-0.13 0.08-0.14 0.06-0.10 0.04-0.05	--- 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	60-95 2.0-8.0 3.0-6.0 0.5-1.0 0.0-0.5	--- .15 .10 .10 .05
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
404: Polallie-----								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-2	5-8	0.85-1.10	2-6	0.09-0.12	0.0-2.9	2.0-3.0	.10
	2-3	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	6.0-10	.15
	3-14	5-10	0.85-1.00	2-6	0.09-0.11	0.0-2.9	4.0-8.0	.10
	14-26	5-15	0.85-1.10	2-6	0.07-0.10	0.0-2.9	2.0-4.0	.17
	26-38	5-10	0.85-1.10	2-6	0.05-0.06	0.0-2.9	1.0-2.0	.05
	38-47	---	---	---	---	---	---	---
Rock outcrop-----								
	0-60	---	---	---	---	---	---	---
405: Polallie-----								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-2	5-8	0.85-1.10	2-6	0.09-0.12	0.0-2.9	2.0-3.0	.10
	2-3	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	6.0-10	.15
	3-14	5-10	0.85-1.00	2-6	0.09-0.11	0.0-2.9	4.0-8.0	.10
	14-26	5-15	0.85-1.10	2-6	0.07-0.10	0.0-2.9	2.0-4.0	.17
	26-38	5-10	0.85-1.10	2-6	0.05-0.06	0.0-2.9	1.0-2.0	.05
	38-47	---	---	---	---	---	---	---
406: Polallie-----								
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-2	5-8	0.85-1.10	2-6	0.09-0.12	0.0-2.9	2.0-3.0	.10
	2-3	5-10	0.85-1.00	2-6	0.09-0.12	0.0-2.9	6.0-10	.15
	3-14	5-10	0.85-1.00	2-6	0.09-0.11	0.0-2.9	4.0-8.0	.10
	14-26	5-15	0.85-1.10	2-6	0.07-0.10	0.0-2.9	2.0-4.0	.17
	26-38	5-10	0.85-1.10	2-6	0.05-0.06	0.0-2.9	1.0-2.0	.05
	38-47	---	---	---	---	---	---	---
408: Rock outcrop-----								
	0-60	---	---	---	---	---	---	---
	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.85-1.10	2-6	0.08-0.12	0.0-2.9	2.0-4.0	.10
	4-9	8-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	1.0-2.0	.10
	9-34	8-15	0.85-1.10	2-6	0.05-0.09	0.0-2.9	0.5-2.0	.10
	34-41	8-15	0.85-1.10	2-6	0.03-0.07	0.0-2.9	0.5-1.0	.05
Domerie-----	41-56	8-16	1.20-1.40	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05
	56-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
409: Domekie, warm-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-4	5-8	0.85-1.10	2-6	0.08-0.12	0.0-2.9	2.0-4.0	.10
	4-9	8-15	0.85-1.10	2-6	0.08-0.12	0.0-2.9	1.0-2.0	.10
	9-34	8-15	0.85-1.10	2-6	0.05-0.09	0.0-2.9	0.5-2.0	.10
	34-41	8-15	0.85-1.10	2-6	0.03-0.07	0.0-2.9	0.5-1.0	.05
	41-56	8-16	1.20-1.40	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05
	56-60	---	---	---	---	---	---	---
410: Tanaha-----	0-7	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-3.0	.24
	7-12	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	12-32	27-35	1.30-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.28
	32-38	---	---	0.06-0.2	0.00-0.00	---	---	---
	38-60	20-30	1.25-1.45	0.2-0.6	0.00-0.00	3.0-5.9	0.0-0.5	.37
411: Argabak-----	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---
414: Argabak-----	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---
415: Benwy-----	0-10	10-15	1.15-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-18	10-15	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	1.0-2.0	.49
	18-33	22-28	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.28
	33-45	22-28	1.30-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.24
	45-55	---	---	0.01-0.2	0.00-0.00	---	---	---
417: Benwy-----	0-10	10-15	1.15-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-18	10-15	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	1.0-2.0	.49
	18-33	22-28	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.28
	33-45	22-28	1.30-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.24
	45-55	---	---	0.01-0.2	0.00-0.00	---	---	---
422: Cierf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
424: Cleman-----	0-14 14-42 42-60	5-10 5-10 2-10	1.15-1.35 1.30-1.60 1.30-1.60	2-6 2-6 2-6	0.14-0.18 0.13-0.15 0.10-0.13	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.0-1.0 0.0-1.0	.43 .55 .55
427: Clerf-----	0-9 9-12 12-24 24-34	20-35 47-60 47-60 ---	1.15-1.30 1.20-1.30 1.20-1.30 ---	0.6-2 0.06-0.2 0.06-0.2 ---	0.07-0.13 0.07-0.12 0.05-0.10 ---	0.0-2.9 3.0-5.9 3.0-5.9 ---	1.0-2.0 1.0-2.0 0.5-2.0 ---	.10 .10 .05 ---
429: Grinrod-----	0-4 4-10 10-27 27-37	15-20 15-20 24-35 ---	1.15-1.35 1.15-1.35 1.30-1.50 ---	0.6-2 0.6-2 0.2-0.6 ---	0.09-0.13 0.09-0.13 0.05-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	1.0-2.0 1.0-2.0 0.5-2.0 ---	.10 .15 .10 ---
Horseflat-----	0-4 4-9 9-16 16-26	15-25 15-27 23-33 ---	1.25-1.35 1.30-1.40 1.30-1.40 ---	0.6-2 0.2-0.6 0.2-0.6 ---	0.08-0.14 0.08-0.14 0.06-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	1.0-2.0 1.0-2.0 1.0-2.0 ---	.10 .15 .05 ---
431: Grinrod-----	0-4 4-10 10-27 27-37	15-20 15-20 24-35 ---	1.15-1.35 1.15-1.35 1.30-1.50 ---	0.6-2 0.6-2 0.2-0.6 ---	0.09-0.13 0.09-0.13 0.05-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	1.0-2.0 1.0-2.0 0.5-2.0 ---	.10 .15 .10 ---
Horseflat-----	0-4 4-9 9-16 16-26	15-25 15-27 23-33 ---	1.25-1.35 1.30-1.40 1.30-1.40 ---	0.6-2 0.2-0.6 0.2-0.6 ---	0.08-0.14 0.08-0.14 0.06-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	1.0-2.0 1.0-2.0 1.0-2.0 ---	.10 .15 .05 ---
Rubble land-----	0-60	0-0	---	---	---	---	---	---
433: Kiona-----	0-4 4-21 21-60	7-15 7-15 7-15	1.15-1.35 1.30-1.50 1.25-1.50	0.6-2 0.6-2 0.6-2	0.14-0.17 0.08-0.11 0.05-0.09	0.0-2.9 0.0-2.9 0.0-2.9	0.5-1.0 0.0-1.0 0.0-0.5	.10 .17 .10
Rubble land-----	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
434:								
Laufer-----	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-3.0	.10
	3-7	27-30	1.15-1.35	0.2-0.6	0.09-0.14	0.0-2.9	1.0-3.0	.15
	7-10	35-40	1.25-1.45	0.2-0.6	0.09-0.14	0.0-2.9	1.0-2.0	.10
	10-15	35-45	1.30-1.50	0.2-0.6	0.05-0.12	3.0-5.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Thiessen-----	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	3.0-5.9	2.0-3.0	.10
	3-9	35-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-22	35-45	1.20-1.35	0.2-0.6	0.06-0.10	3.0-5.9	1.0-2.0	.05
	22-32	---	---	---	---	---	---	---
438:								
Blint-----	0-4	15-20	1.10-1.30	0.6-2	0.11-0.15	0.0-2.9	2.0-3.0	.10
	4-10	15-20	1.00-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	10-18	23-33	1.25-1.45	0.2-0.6	0.09-0.13	0.0-2.9	0.5-2.0	.15
	18-22	23-33	1.25-1.45	0.2-0.6	0.03-0.13	0.0-2.9	0.5-2.0	.10
	22-32	---	---	---	---	---	---	---
440:								
Nitzel-----	0-8	18-24	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	8-29	20-27	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	29-46	20-30	1.20-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	46-60	14-18	1.25-1.40	2-6	0.11-0.13	0.0-2.9	0.5-3.0	.20
450:								
Argixerolls, south slopes-----	0-5	27-35	1.20-1.35	0.6-2	0.11-0.14	3.0-5.9	1.0-2.0	.10
	5-37	27-40	1.25-1.40	0.2-0.6	0.18-0.21	3.0-5.9	0.5-2.0	.37
	37-60	30-60	1.35-1.65	0.06-0.2	0.08-0.11	3.0-5.9	0.0-2.0	.17
Durixerolls, south slopes-----	0-9	15-27	1.15-1.40	0.6-2	0.12-0.15	0.0-2.9	1.0-2.0	.10
	9-12	17-35	1.30-1.50	0.2-0.6	0.09-0.12	3.0-5.9	0.0-1.0	.17
	12-21	20-40	1.30-1.50	0.2-0.6	0.07-0.12	3.0-5.9	0.5-2.0	.05
	21-31	---	---	0.01-0.2	0.00-0.00	---	---	---
	31-60	---	---	0.01-0.2	0.00-0.00	---	---	---
452:								
Argabak-----	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
452: Zen-----	0-7	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	7-12	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-27	18-35	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	0.5-1.0	.43
	27-30	18-38	1.30-1.50	0.6-2	0.14-0.19	3.0-5.9	0.5-1.0	.24
	30-40	---	---	---	---	---	---	---
Grinrod-----	0-4	15-20	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.10
	4-10	15-20	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	10-27	24-35	1.30-1.50	0.2-0.6	0.05-0.12	0.0-2.9	0.5-2.0	.10
	27-37	---	---	---	---	---	---	---
456: Cheviot-----	0-4	15-25	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	1.0-3.0	.10
	4-16	15-25	1.15-1.35	0.6-2	0.08-0.13	0.0-2.9	1.0-2.0	.15
	16-44	15-25	1.35-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.15
	44-49	15-25	1.35-1.55	0.6-2	0.05-0.10	0.0-2.9	0.0-0.5	.05
	49-60	15-25	1.35-1.55	0.6-2	0.05-0.10	0.0-2.9	0.0-0.5	.05
Rubble land-----	0-60	---	---	---	---	---	---	---
457: Cheviot-----	0-4	15-25	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	1.0-3.0	.10
	4-16	15-25	1.15-1.35	0.6-2	0.08-0.13	0.0-2.9	1.0-2.0	.15
	16-44	15-25	1.35-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.15
	44-49	15-25	1.35-1.55	0.6-2	0.05-0.10	0.0-2.9	0.0-0.5	.05
	49-60	15-25	1.35-1.55	0.6-2	0.05-0.10	0.0-2.9	0.0-0.5	.05
458: Clerf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Cheviot-----	0-4	15-25	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	1.0-3.0	.10
	4-16	15-25	1.15-1.35	0.6-2	0.08-0.13	0.0-2.9	1.0-2.0	.15
	16-44	15-25	1.35-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.15
	44-49	15-25	1.35-1.55	0.6-2	0.05-0.10	0.0-2.9	0.0-0.5	.05
	49-60	15-25	1.35-1.55	0.6-2	0.05-0.10	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
460: Neviot	0-6	14-27	1.10-1.30	0.6-2	0.11-0.17	0.0-2.9	2.0-3.0	.15
	6-12	14-27	1.10-1.30	0.6-2	0.15-0.18	0.0-2.9	1.0-3.0	.20
	12-22	15-25	1.25-1.50	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	22-40	15-25	1.25-1.50	0.6-2	0.09-0.13	0.0-2.9	0.5-2.0	.10
	40-49	15-25	1.25-1.50	0.6-2	0.06-0.13	0.0-2.9	0.5-1.0	.10
	49-60	15-18	1.25-1.50	0.6-2	0.05-0.09	0.0-2.9	0.0-0.5	.10
Palerf	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
Vantage	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
	0-4	7-15	1.15-1.35	0.6-2	0.14-0.17	0.0-2.9	0.5-1.0	.15
461: Kiona	4-21	7-15	1.30-1.50	0.6-2	0.08-0.11	0.0-2.9	0.0-1.0	.17
	21-60	7-15	1.25-1.50	0.6-2	0.05-0.09	0.0-2.9	0.0-0.5	.10
	0-4	15-25	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	1.0-2.0	.10
	4-9	15-27	1.30-1.40	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.15
	9-16	23-33	1.30-1.40	0.2-0.6	0.06-0.12	0.0-2.9	1.0-2.0	.05
465: Horseflat	16-26	---	---	---	---	---	---	---
	0-10	10-15	1.15-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-18	10-15	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	1.0-2.0	.49
	18-33	22-28	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.28
	33-45	22-28	1.30-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.24
466: Benwy	45-55	---	---	0.01-0.2	0.00-0.00	---	---	---
	0-4	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.05
	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
	0-4	15-60	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
470: Weirman	0-4	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.05
	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
	0-4	15-60	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
476: RaLock								
	0-4	9-17	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	4-14	9-17	1.15-1.30	0.6-2	0.16-0.21	0.0-2.9	1.0-2.0	.32
	14-27	20-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	1.0-2.0	.43
	27-36	25-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.20
	36-60	25-40	1.35-1.55	0.2-0.6	0.09-0.12	3.0-5.9	0.0-0.5	.17
Horseflat								
	0-4	15-25	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	1.0-2.0	.10
	4-9	15-27	1.30-1.40	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.15
	9-16	23-33	1.30-1.40	0.2-0.6	0.06-0.12	0.0-2.9	1.0-2.0	.05
	16-26	---	---	---	---	---	---	---
480: Nanum								
	0-8	22-27	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-5.0	.24
	8-15	25-33	1.15-1.40	0.2-0.6	0.17-0.20	3.0-5.9	2.0-5.0	.28
	15-28	27-35	1.15-1.40	0.2-0.6	0.15-0.20	3.0-5.9	1.0-2.0	.28
	28-35	27-35	1.25-1.40	0.2-0.6	0.08-0.11	3.0-5.9	1.0-2.0	.10
	35-60	27-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-2.0	.02
481: Nanum								
	0-8	22-27	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-5.0	.24
	8-15	25-33	1.15-1.40	0.2-0.6	0.17-0.20	3.0-5.9	2.0-5.0	.28
	15-28	27-35	1.15-1.40	0.2-0.6	0.15-0.20	3.0-5.9	1.0-2.0	.28
	28-35	27-35	1.25-1.40	0.2-0.6	0.08-0.11	3.0-5.9	1.0-2.0	.10
	35-60	27-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-2.0	.02
482: Rollinger								
	0-6	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43
	6-11	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	11-32	25-33	1.35-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.37
	32-41	18-27	1.25-1.40	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.43
	41-54	18-30	1.25-1.45	0.2-2	0.15-0.20	0.0-2.9	0.5-2.0	.37
485: Rollinger								
	54-60	15-27	1.25-1.45	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.43
	0-6	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43
	6-11	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	11-32	25-33	1.35-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.37
485: Rollinger								
	32-41	18-27	1.25-1.40	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.43
	41-54	18-30	1.25-1.45	0.2-2	0.15-0.20	0.0-2.9	0.5-2.0	.37
	54-60	15-27	1.25-1.45	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.43

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
487: Rollinger-----	0-6	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43
	6-11	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	11-32	25-33	1.35-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.37
	32-41	18-27	1.25-1.40	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.43
	41-54	18-30	1.25-1.45	0.2-2	0.15-0.20	0.0-2.9	0.5-2.0	.37
	54-60	15-27	1.25-1.45	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.43
489: Rollinger-----	0-6	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43
	6-11	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	11-32	25-33	1.35-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.37
	32-41	18-27	1.25-1.40	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.43
	41-54	18-30	1.25-1.45	0.2-2	0.15-0.20	0.0-2.9	0.5-2.0	.37
	54-60	15-27	1.25-1.45	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.43
492: Rollinger-----	0-6	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43
	6-11	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	11-32	25-33	1.35-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.37
	32-41	18-27	1.25-1.40	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.43
	41-54	18-30	1.25-1.45	0.2-2	0.15-0.20	0.0-2.9	0.5-2.0	.37
	54-60	15-27	1.25-1.45	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.43
493: Rollinger-----	0-6	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43
	6-11	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	11-32	25-33	1.35-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.37
	32-41	18-27	1.25-1.40	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.43
	41-54	18-30	1.25-1.45	0.2-2	0.15-0.20	0.0-2.9	0.5-2.0	.37
	54-60	15-27	1.25-1.45	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.43
494: Caliralls-----	0-6	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43
	6-11	9-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	11-32	25-33	1.35-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.37
	32-41	18-27	1.25-1.40	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.43
	41-54	18-30	1.25-1.45	0.2-2	0.15-0.20	0.0-2.9	0.5-2.0	.37
	54-60	15-27	1.25-1.45	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.43
495: Caliralls-----	0-5	15-20	1.15-1.35	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	5-12	15-20	1.15-1.35	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-31	25-35	1.20-1.45	0.2-0.6	0.12-0.14	3.0-5.9	0.5-2.0	.20
	31-52	25-35	1.30-1.50	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.24
	52-60	20-40	1.30-1.50	0.2-0.6	0.10-0.13	3.0-5.9	0.0-0.5	.15
495: Caliralls-----	0-5	15-20	1.15-1.35	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	5-12	15-20	1.15-1.35	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-31	25-35	1.20-1.45	0.2-0.6	0.12-0.14	3.0-5.9	0.5-2.0	.20
	31-52	25-35	1.30-1.50	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.24
	52-60	20-40	1.30-1.50	0.2-0.6	0.10-0.13	3.0-5.9	0.0-0.5	.15

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
495: Clerf-----								
	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
497: Camaspach-----								
	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
498: Caliralls-----								
	0-5	15-20	1.15-1.35	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	5-12	15-20	1.15-1.35	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.40
	12-31	25-35	1.20-1.45	0.2-0.6	0.12-0.14	3.0-5.9	0.5-2.0	.20
	31-52	25-35	1.30-1.50	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.24
	52-60	20-40	1.30-1.50	0.2-0.6	0.10-0.13	3.0-5.9	0.0-0.5	.15
Clerf-----								
	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
500: Vantage-----								
	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
502: Vantage-----								
	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
503: Terlan-----								
	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
503:								
Durtash-----	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.20
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---
Selah-----	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
509:								
Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
511:								
Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
512:								
Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
512:								
Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
513: Meloza	0-4	27-30	1.10-1.30	0.2-0.6	0.19-0.20	3.0-5.9	1.0-2.0	.28
	4-30	35-60	1.15-1.40	0.06-0.2	0.15-0.17	6.0-8.9	0.5-2.0	.28
	30-42	35-60	1.15-1.40	0.06-0.2	0.14-0.17	6.0-8.9	0.0-1.0	.28
	42-60	30-60	1.20-1.40	0.06-0.2	0.14-0.17	6.0-8.9	0.0-0.5	.24
Cowiche	0-15	10-20	1.15-1.30	0.6-2	0.17-0.19	0.0-2.9	1.0-3.0	.32
	15-35	18-30	1.30-1.50	0.6-2	0.15-0.19	3.0-5.9	0.0-0.5	.32
	35-51	18-30	1.30-1.50	0.6-2	0.15-0.19	3.0-5.9	0.0-0.5	.32
	51-60	5-20	1.30-1.50	0.6-2	0.12-0.14	0.0-2.9	0.0-0.5	.28
516: Selah	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
517: Selah	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
519: Selah	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
523: Terlan	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
524: Terlan	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
524: Terlan	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
524: Terlan	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
524: Terlan	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
524: Terlan	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
524: Terlan	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
525: Terlan-----	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
532: Selah-----	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
Terlan-----	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
533: Selah-----	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
535: Zen-----	0-7	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	7-12	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-27	18-35	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	0.5-1.0	.43
	27-30	18-38	1.30-1.50	0.6-2	0.14-0.19	3.0-5.9	0.5-1.0	.24
	30-40	---	---	---	---	---	---	---
538: Zen-----	0-7	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	7-12	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-27	18-35	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	0.5-1.0	.43
	27-30	18-38	1.30-1.50	0.6-2	0.14-0.19	3.0-5.9	0.5-1.0	.24
	30-40	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
539: Zen-----	0-7	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	7-12	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-27	18-35	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	0.5-1.0	.43
	27-30	18-38	1.30-1.50	0.6-2	0.14-0.19	3.0-5.9	0.5-1.0	.24
	30-40	---	---	---	---	---	---	---
553: Ralock-----	0-4	9-17	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	4-14	9-17	1.15-1.30	0.6-2	0.16-0.21	0.0-2.9	1.0-2.0	.32
	14-27	20-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	1.0-2.0	.40
	27-36	25-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.23
	36-60	25-40	1.35-1.55	0.2-0.6	0.09-0.12	3.0-5.9	0.0-0.5	.17
554: Pachneum-----	0-8	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.24
	8-18	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.32
	18-26	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.28
	26-33	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.32
	33-47	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	47-60	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
557: Pachneum-----	0-8	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.24
	8-18	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.32
	18-26	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.28
	26-33	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.32
	33-47	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	47-60	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
558: Argixerolls, north slopes-----	0-14	15-27	1.20-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.37
	14-42	27-40	1.25-1.40	0.2-0.6	0.18-0.21	3.0-5.9	0.5-2.0	.24
	42-60	30-60	1.35-1.65	0.06-0.2	0.08-0.11	3.0-5.9	0.0-2.0	.15
Durixerolls, north slopes-----	0-9	15-27	1.15-1.40	0.6-2	0.12-0.15	0.0-2.9	1.0-2.0	.10
	9-12	17-35	1.30-1.50	0.2-0.6	0.09-0.12	3.0-5.9	0.0-1.0	.17
	12-21	20-40	1.30-1.50	0.2-0.6	0.07-0.12	3.0-5.9	0.5-2.0	.05
	21-31	---	---	0.01-0.2	0.00-0.00	---	---	---
	31-60	---	---	0.01-0.2	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
561: Elkheights-----	0-8	13-15	1.25-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	8-19	19-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	19-41	20-25	1.45-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37
	41-56	25-30	1.45-1.55	0.2-0.6	0.15-0.17	3.0-5.9	0.0-0.5	.28
	56-60	25-35	1.70-2.00	0.06-0.2	0.00-0.00	3.0-5.9	0.0-0.5	.10
563: Mendian-----	0-6	10-13	1.25-1.40	0.6-2	0.15-0.17	0.0-2.9	1.0-3.0	.37
	6-13	10-13	1.35-1.55	0.6-2	0.15-0.17	0.0-2.9	1.0-2.0	.49
	13-22	17-29	1.45-1.55	0.6-2	0.15-0.17	0.0-2.9	0.5-1.0	.28
	22-38	25-35	1.45-1.55	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.20
	38-46	30-40	1.45-1.55	0.2-0.6	0.05-0.10	0.0-2.9	0.0-1.0	.05
	46-60	30-40	1.45-1.55	0.2-0.6	0.04-0.09	0.0-2.9	0.0-0.5	.05
570: Wipple-----	0-7	27-35	1.10-1.30	0.2-2	0.14-0.19	0.0-2.9	1.0-2.0	.10
	7-11	30-40	1.25-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-2.0	.10
	11-30	50-60	1.25-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-1.0	.05
	30-50	32-60	1.25-1.55	0.06-0.6	0.06-0.12	3.0-5.9	0.0-0.5	.10
	50-60	---	---	---	---	---	---	---
571: Wipple-----	0-7	27-35	1.10-1.30	0.2-2	0.14-0.19	0.0-2.9	1.0-2.0	.10
	7-11	30-40	1.25-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-2.0	.10
	11-30	50-60	1.25-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-1.0	.05
	30-50	32-60	1.25-1.55	0.06-0.6	0.06-0.12	3.0-5.9	0.0-0.5	.10
	50-60	---	---	---	---	---	---	---
580: Woldale-----	0-5	30-40	1.10-1.30	0.6-2	0.19-0.21	3.0-5.9	3.0-5.0	.20
	5-31	40-60	1.00-1.25	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.20
	31-43	40-60	1.10-1.35	0.06-0.2	0.06-0.10	6.0-8.9	0.5-2.0	.10
	43-60	27-60	1.25-1.45	0.2-2	0.05-0.11	3.0-5.9	0.5-1.0	.05
584: Varodale-----	0-22	45-60	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	3.0-5.0	.15
	22-38	45-60	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	38-44	45-60	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	0.5-2.0	.24
	44-60	45-60	1.15-1.40	0.06-0.2	0.08-0.16	6.0-8.9	0.5-2.0	.15
585: Varodale-----	0-22	45-60	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	3.0-5.0	.15
	22-38	45-60	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	38-44	45-60	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	0.5-2.0	.24
	44-60	45-60	1.15-1.40	0.06-0.2	0.08-0.16	6.0-8.9	0.5-2.0	.15

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
586: Vanderbilt, moderately wet	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
	0-8	20-24	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	2.0-4.0	.24
	8-28	20-24	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	2.0-4.0	.28
	28-38	27-32	1.15-1.40	0.2-0.6	0.19-0.21	0.0-2.9	1.0-3.0	.32
	38-60	27-32	1.15-1.40	0.2-0.6	0.19-0.21	0.0-2.9	0.5-2.0	.32
587: Argixerolls	0-17	15-27	1.20-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.37
	17-49	27-40	1.25-1.40	0.2-0.6	0.18-0.21	3.0-5.9	0.5-2.0	.37
	49-60	30-60	1.35-1.65	0.06-0.6	0.08-0.11	3.0-5.9	0.0-2.0	.15
589: Nack	0-6	18-25	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	2.0-4.0	.15
	6-15	25-30	1.15-1.40	0.2-0.6	0.11-0.16	3.0-5.9	1.0-3.0	.32
	15-60	25-40	1.30-1.50	0.2-0.6	0.04-0.08	3.0-5.9	1.0-2.0	.02
Brickmill	0-12	15-20	1.15-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.15
	12-28	15-20	1.30-1.50	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	28-38	15-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.02
	38-49	12-15	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.05
	49-60	0-10	1.40-1.55	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
590: Brickmill	0-12	15-20	1.15-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.15
	12-28	15-20	1.30-1.50	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	28-38	15-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.02
	38-49	12-15	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.05
	49-60	0-10	1.40-1.55	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
Nanum	0-8	22-27	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-5.0	.24
	8-15	25-33	1.15-1.40	0.2-0.6	0.17-0.20	3.0-5.9	2.0-5.0	.28
	15-28	27-35	1.15-1.40	0.2-0.6	0.15-0.20	3.0-5.9	1.0-2.0	.28
	28-35	27-35	1.25-1.40	0.2-0.6	0.08-0.11	3.0-5.9	1.0-2.0	.10
	35-60	27-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-2.0	.02
592: Untanum	0-9	20-25	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.28
	9-16	25-33	1.15-1.40	0.2-0.6	0.19-0.21	3.0-5.9	3.0-5.0	.32
	16-42	35-45	1.20-1.40	0.2-0.6	0.14-0.19	3.0-5.9	2.0-4.0	.28
	42-60	27-45	1.20-1.40	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.37

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
593: Camaspatch-----	0-4 4-9 9-15 15-25	20-27 35-40 45-65 ---	1.15-1.30 1.15-1.35 1.30-1.50 ---	0.6-2 0.2-0.6 0.06-0.2 ---	0.09-0.13 0.09-0.13 0.05-0.10 ---	0.0-2.9 3.0-5.9 6.0-8.9 ---	1.0-2.0 1.0-2.0 1.0-2.0 ---	.15 .10 .05 ---
Whiskeydick-----	0-4 4-10 10-27 27-37	17-23 38-50 45-55 ---	1.15-1.35 1.25-1.45 1.30-1.50 ---	0.6-2 0.06-0.2 0.06-0.2 ---	0.09-0.12 0.06-0.12 0.04-0.10 ---	0.0-2.9 3.0-5.9 3.0-5.9 ---	1.0-3.0 1.0-2.0 0.5-2.0 ---	.10 .10 .05 ---
594: Camaspatch-----	0-4 4-9 9-15 15-25	20-27 35-40 45-65 ---	1.15-1.30 1.15-1.35 1.30-1.50 ---	0.6-2 0.2-0.6 0.06-0.2 ---	0.09-0.13 0.09-0.13 0.05-0.10 ---	0.0-2.9 3.0-5.9 6.0-8.9 ---	1.0-2.0 1.0-2.0 1.0-2.0 ---	.15 .10 .05 ---
Whiskeydick-----	0-4 4-10 10-27 27-37	17-23 38-50 45-55 ---	1.15-1.35 1.25-1.45 1.30-1.50 ---	0.6-2 0.06-0.2 0.06-0.2 ---	0.09-0.12 0.06-0.12 0.04-0.10 ---	0.0-2.9 3.0-5.9 3.0-5.9 ---	1.0-3.0 1.0-2.0 0.5-2.0 ---	.10 .10 .05 ---
595: Camaspatch-----	0-4 4-9 9-15 15-25	20-27 35-40 45-65 ---	1.15-1.30 1.15-1.35 1.30-1.50 ---	0.6-2 0.2-0.6 0.06-0.2 ---	0.09-0.13 0.09-0.13 0.05-0.10 ---	0.0-2.9 3.0-5.9 6.0-8.9 ---	1.0-2.0 1.0-2.0 1.0-2.0 ---	.15 .10 .05 ---
Whiskeydick-----	0-4 4-10 10-27 27-37	17-23 38-50 45-55 ---	1.15-1.35 1.25-1.45 1.30-1.50 ---	0.6-2 0.06-0.2 0.06-0.2 ---	0.09-0.12 0.06-0.12 0.04-0.10 ---	0.0-2.9 3.0-5.9 3.0-5.9 ---	1.0-3.0 1.0-2.0 0.5-2.0 ---	.10 .10 .05 ---
598: Zillah-----	0-7 7-15 15-32 32-51 51-60	12-18 12-18 12-18 12-18 0-5	1.15-1.40 1.15-1.40 1.20-1.45 1.20-1.45 1.40-1.65	0.6-2 0.6-2 0.6-2 0.6-2 6-20	0.19-0.21 0.19-0.21 0.18-0.21 0.18-0.21 0.06-0.08	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	2.0-5.0 2.0-5.0 0.5-1.0 0.5-1.0 0.0-0.5	.37 .43 .55 .43 .10
601: Brickmill-----	0-12 12-28 28-38 38-49 49-60	15-20 15-20 15-25 12-15 0-10	1.15-1.40 1.30-1.50 1.30-1.50 1.30-1.50 1.40-1.55	0.6-2 0.6-2 0.6-2 0.6-2 6-20	0.07-0.11 0.05-0.11 0.05-0.10 0.05-0.10 0.03-0.04	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	1.0-3.0 0.5-2.0 0.5-1.0 0.5-1.0 0.0-0.5	.15 .05 .02 .05 .02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
602: Brickmill	0-12	15-20	1.15-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.15
	12-28	15-20	1.30-1.50	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	28-38	15-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.02
	38-49	12-15	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.05
	49-60	0-10	1.40-1.55	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
603: Reeser	0-6	27-32	1.15-1.45	0.2-0.6	0.18-0.22	3.0-5.9	1.0-3.0	.28
	6-13	25-32	1.15-1.45	0.2-0.6	0.12-0.19	3.0-5.9	1.0-2.0	.37
	13-22	35-45	1.25-1.50	0.06-0.2	0.10-0.18	6.0-8.9	0.5-2.0	.32
	22-26	---	---	0.0015-0.06	---	---	---	---
	26-58	---	---	0.0015-0.06	---	---	---	---
604: Reeser	58-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
	0-6	27-32	1.15-1.45	0.2-0.6	0.18-0.22	3.0-5.9	1.0-3.0	.28
	6-13	25-32	1.15-1.45	0.2-0.6	0.12-0.19	3.0-5.9	1.0-2.0	.37
	13-22	35-45	1.25-1.50	0.06-0.2	0.10-0.18	6.0-8.9	0.5-2.0	.32
	22-26	---	---	0.0015-0.06	---	---	---	---
605: Disage	26-58	---	---	0.0015-0.06	---	---	---	---
	58-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
	0-4	20-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-9	35-40	1.25-1.40	0.2-0.6	0.09-0.12	3.0-5.9	0.5-1.0	.10
	9-18	35-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.10
606: Disage	18-28	---	---	---	---	---	---	---
	0-4	20-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-9	35-40	1.25-1.40	0.2-0.6	0.09-0.12	3.0-5.9	0.5-1.0	.10
	9-18	35-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.10
	18-28	---	---	---	---	---	---	---
607: Disage	0-4	20-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-9	35-40	1.25-1.40	0.2-0.6	0.09-0.12	3.0-5.9	0.5-1.0	.10
	9-18	35-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.10
	18-28	---	---	---	---	---	---	---
	0-3	18-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.10
Clenage	3-16	31-35	1.25-1.40	0.2-0.6	0.12-0.15	3.0-5.9	0.0-1.0	.15
	16-25	41-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.05
	25-35	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
609: Ackna-----	0-8	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.24
	8-18	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	18-28	25-27	1.25-1.40	0.6-2	0.15-0.20	3.0-5.9	1.0-2.0	.32
	28-42	25-30	1.25-1.40	0.6-2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	42-55	17-30	1.25-1.40	0.6-2	0.04-0.08	3.0-5.9	0.5-1.0	.05
	55-60	0-10	1.40-1.55	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
610: Ackna-----	0-8	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.24
	8-18	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	18-28	25-27	1.25-1.40	0.6-2	0.15-0.20	3.0-5.9	1.0-2.0	.32
	28-42	25-30	1.25-1.40	0.6-2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	42-55	17-30	1.25-1.40	0.6-2	0.04-0.08	3.0-5.9	0.5-1.0	.05
	55-60	0-10	1.40-1.55	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
612: Nitcha-----	0-12	18-27	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.24
	12-42	18-27	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.24
	42-60	14-18	1.35-1.50	2-6	0.11-0.13	0.0-2.9	1.0-2.0	.20
614: Canaspatch-----	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
618: Nitzel, gravelly substratum-----	0-8	18-24	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	8-29	20-27	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	29-46	20-30	1.20-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	46-60	14-18	1.25-1.40	2-6	0.11-0.13	0.0-2.9	0.5-3.0	.20
621: Mitta, flooded-----	0-6	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.32
	6-15	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-5.0	.37
	15-34	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	34-49	25-30	1.15-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-2.0	.43
	49-60	25-30	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.49

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
622: Manastash-----	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
623: Manastash-----	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
624: Manastash-----	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
625: Manastash-----	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
Durtash-----	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.20
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
626: Manastash-----	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
Selah-----	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.20
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
Durtash-----	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---
	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
632: Manastash-----	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-6	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.24
	6-15	25-30	1.15-1.40	0.2-0.6	0.11-0.16	3.0-5.9	1.0-3.0	.32
	15-60	25-40	1.30-1.50	0.2-0.6	0.04-0.08	3.0-5.9	1.0-2.0	.02
	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
633: Nack-----	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
634: Manastash-----	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
634: Durtash-----	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.17
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---
635: Opnish-----	0-8	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.24
	8-13	26-33	1.15-1.40	0.2-0.6	0.17-0.20	3.0-5.9	1.0-4.0	.32
	13-26	35-40	1.25-1.40	0.2-0.6	0.17-0.20	3.0-5.9	1.0-3.0	.24
	26-60	35-40	1.25-1.40	0.2-0.6	0.15-0.20	3.0-5.9	0.5-3.0	.05
637: Tankssel-----	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
Lainand-----	28-38	---	---	---	---	---	---	---
	0-6	15-25	1.10-1.30	0.6-2	0.15-0.19	0.0-2.9	2.0-3.0	.10
	6-12	15-25	1.10-1.30	0.6-2	0.13-0.18	0.0-2.9	1.0-3.0	.37
	12-20	15-25	1.15-1.30	0.6-2	0.08-0.15	0.0-2.9	1.0-3.0	.15
	20-41	30-35	1.30-1.40	0.2-0.6	0.05-0.12	0.0-2.9	0.5-1.0	.10
638: Tankssel-----	41-60	20-35	1.30-1.40	0.2-20	0.05-0.12	0.0-2.9	0.5-1.0	.05
	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
Lainand-----	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
	28-38	---	---	---	---	---	---	---
	0-6	15-25	1.10-1.30	0.6-2	0.15-0.19	0.0-2.9	2.0-3.0	.10
	6-12	15-25	1.10-1.30	0.6-2	0.13-0.18	0.0-2.9	1.0-3.0	.37
Camaspetch-----	12-20	15-25	1.15-1.30	0.6-2	0.08-0.15	0.0-2.9	1.0-3.0	.15
	20-41	30-35	1.30-1.40	0.2-0.6	0.05-0.12	0.0-2.9	0.5-1.0	.10
	41-60	20-35	1.30-1.40	0.2-20	0.05-0.12	0.0-2.9	0.5-1.0	.05
	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
640: Elkheights	0-8	13-15	1.25-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	8-19	19-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	19-41	20-25	1.45-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37
	41-56	25-30	1.45-1.55	0.2-0.6	0.15-0.17	3.0-5.9	0.0-0.5	.28
	56-60	25-35	1.70-2.00	0.06-0.2	0.00-0.00	3.0-5.9	0.0-0.5	.10
644: Drino	0-3	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.10
	3-7	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.15
	7-19	15-27	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-1.0	.15
	19-38	18-27	1.30-1.50	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.10
	38-48	---	---	---	---	---	---	---
Schappy	0-4	5-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	0.5-1.0	.49
	4-32	10-15	1.15-1.40	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.55
	32-43	15-25	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	0.0-0.5	.32
	43-51	15-28	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.15
	51-60	---	---	---	---	---	---	---
Fortyday	0-3	10-15	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	0.5-1.0	.20
	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
	---	---	---	---	---	---	---	---
650: Tankssel	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
Patron	28-38	---	---	---	---	---	---	---
	0-12	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	2.0-3.0	.20
	12-35	35-45	1.20-1.35	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.17
	35-60	35-50	1.30-1.50	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.10
	---	---	---	---	---	---	---	---
Camaspetch	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
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Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
656: Tanksel	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
	28-38	---	---	---	---	---	---	---
Patron	0-12	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	2.0-3.0	.20
	12-35	35-45	1.20-1.35	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.17
	35-60	35-50	1.30-1.50	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.10
Camaspatch	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
658: Camaspatch	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Tanksel	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
	28-38	---	---	---	---	---	---	---
661: Drysel	0-11	15-18	1.10-1.35	0.6-2	0.19-0.21	0.0-2.9	0.5-1.0	.37
	11-27	25-34	1.30-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.0-0.5	.49
	27-31	25-35	1.30-1.50	0.2-0.6	0.12-0.16	3.0-5.9	0.0-0.5	.43
	31-41	---	---	0.0015-0.06	0.00-0.00	---	---	---
662: Ralock	0-4	9-17	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	4-14	9-17	1.15-1.30	0.6-2	0.16-0.21	0.0-2.9	1.0-2.0	.32
	14-27	20-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	1.0-2.0	.43
	27-36	25-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.20
	36-60	25-40	1.35-1.55	0.2-0.6	0.09-0.12	3.0-5.9	0.0-0.5	.17

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
662: Palerf-----	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
663: Ralock-----	0-4	9-17	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	4-14	9-17	1.15-1.30	0.6-2	0.16-0.21	0.0-2.9	1.0-2.0	.32
	14-27	20-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	1.0-2.0	.43
	27-36	25-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.20
	36-60	25-40	1.35-1.55	0.2-0.6	0.09-0.12	3.0-5.9	0.0-0.5	.17
Palerf-----	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
667: Laufer-----	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-3.0	.10
	3-7	27-30	1.15-1.35	0.2-0.6	0.09-0.14	0.0-2.9	1.0-3.0	.15
	7-10	35-40	1.25-1.45	0.2-0.6	0.09-0.14	0.0-2.9	1.0-2.0	.10
	10-15	35-45	1.30-1.50	0.2-0.6	0.05-0.12	3.0-5.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Thiessen-----	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	3.0-5.9	2.0-3.0	.10
	3-9	35-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-22	35-45	1.20-1.35	0.2-0.6	0.06-0.10	3.0-5.9	1.0-2.0	.05
	22-32	---	---	---	---	---	---	---
668: Laufer-----	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-3.0	.10
	3-7	27-30	1.15-1.35	0.2-0.6	0.09-0.14	0.0-2.9	1.0-3.0	.15
	7-10	35-40	1.25-1.45	0.2-0.6	0.09-0.14	0.0-2.9	1.0-2.0	.10
	10-15	35-45	1.30-1.50	0.2-0.6	0.05-0.12	3.0-5.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Thiessen-----	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	3.0-5.9	2.0-3.0	.10
	3-9	35-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-22	35-45	1.20-1.35	0.2-0.6	0.06-0.10	3.0-5.9	1.0-2.0	.05
	22-32	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
669: Argabak-----								
	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---
Zen-----								
	0-7	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	7-12	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-27	18-35	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	0.5-1.0	.43
	27-30	18-38	1.30-1.50	0.6-2	0.14-0.19	3.0-5.9	0.5-1.0	.24
	30-40	---	---	---	---	---	---	---
Grinrod-----								
	0-4	15-20	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.10
	4-10	15-20	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	10-27	24-35	1.30-1.50	0.2-0.6	0.05-0.12	0.0-2.9	0.5-2.0	.10
	27-37	---	---	---	---	---	---	---
670: Argabak-----								
	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---
Whiskeydick-----								
	0-4	17-23	1.15-1.35	0.6-2	0.09-0.12	0.0-2.9	1.0-3.0	.10
	4-10	38-50	1.25-1.45	0.06-0.2	0.06-0.12	3.0-5.9	1.0-2.0	.10
	10-27	45-55	1.30-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-2.0	.05
	27-37	---	---	---	---	---	---	---
672: Argabak-----								
	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---
Mozen-----								
	0-5	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.37
	5-13	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.43
	13-22	27-33	1.45-1.55	0.2-0.6	0.10-0.14	3.0-5.9	1.0-2.0	.32
	22-28	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	28-39	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	39-49	---	---	---	---	---	---	---
674: Durtash, gravelly-----								
	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.20
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
684: Nitzel	0-8	18-24	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	8-29	20-27	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	29-46	20-30	1.20-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	46-60	14-18	1.25-1.40	2-6	0.11-0.13	0.0-2.9	0.5-3.0	.20
Weirman	0-5	0-10	1.15-1.40	2-6	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
693: Tankse1	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
	28-38	---	---	---	---	---	---	---
Wockum	0-17	15-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-3.0	.37
	17-59	23-35	1.20-1.40	0.2-0.6	0.12-0.15	0.0-2.9	0.5-2.0	.43
	59-60	25-35	1.20-1.40	0.2-0.6	0.11-0.14	3.0-5.9	0.5-1.0	.15
695: Drino	0-3	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.10
	3-7	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.15
	7-19	15-27	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-1.0	.15
	19-38	18-27	1.30-1.50	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.10
	38-48	---	---	---	---	---	---	---
Schappy	0-4	5-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	0.5-1.0	.49
	4-32	10-15	1.15-1.40	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.55
	32-43	15-25	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	0.0-0.5	.32
	43-51	15-28	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.15
	51-60	---	---	---	---	---	---	---
Fortyday	0-3	10-15	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	0.5-1.0	.20
	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
697: Wockum	0-17	15-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-3.0	.37
	17-59	23-35	1.20-1.40	0.2-0.6	0.12-0.15	0.0-2.9	0.5-2.0	.43
	59-60	25-35	1.20-1.40	0.2-0.6	0.11-0.14	3.0-5.9	0.5-1.0	.15

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
697: Blint	0-4	15-20	1.10-1.30	0.6-2	0.11-0.15	0.0-2.9	2.0-3.0	.10
	4-10	15-20	1.00-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	10-18	23-33	1.25-1.45	0.2-0.6	0.09-0.13	0.0-2.9	0.5-2.0	.15
	18-22	23-33	1.25-1.45	0.2-0.6	0.03-0.13	0.0-2.9	0.5-2.0	.10
	22-32	---	---	---	---	---	---	---
698: Wockum	0-17	15-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-3.0	.37
	17-59	23-35	1.20-1.40	0.2-0.6	0.12-0.15	0.0-2.9	0.5-2.0	.43
	59-60	25-35	1.20-1.40	0.2-0.6	0.11-0.14	3.0-5.9	0.5-1.0	.15
	0-4	15-20	1.10-1.30	0.6-2	0.11-0.15	0.0-2.9	2.0-3.0	.10
Blint	4-10	15-20	1.00-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	10-18	23-33	1.25-1.45	0.2-0.6	0.09-0.13	0.0-2.9	0.5-2.0	.15
	18-22	23-33	1.25-1.45	0.2-0.6	0.03-0.13	0.0-2.9	0.5-2.0	.10
	22-32	---	---	---	---	---	---	---
	0-3	15-25	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	1.0-3.0	.15
Windry	3-7	15-27	1.30-1.40	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.15
	7-15	20-30	1.30-1.40	0.2-0.6	0.06-0.12	0.0-2.9	1.0-2.0	.05
	15-19	---	---	---	---	---	---	---
	0-6	7-10	0.85-1.10	0.6-2	0.12-0.16	0.0-2.9	3.0-7.0	.24
706: Kayak	6-17	18-25	1.15-1.40	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.20
	17-29	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.24
	29-39	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.24
	39-60	0-2	1.25-1.45	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
	0-4	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.15
712: Malaga	4-9	5-15	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.20
	9-12	5-15	1.30-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.10
	12-19	5-15	1.30-1.50	2-6	0.05-0.07	0.0-2.9	0.0-0.5	.05
	19-60	0-5	1.40-1.65	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02
	0-4	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.15
713: Malaga	4-9	5-15	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.20
	9-12	5-15	1.30-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.10
	12-19	5-15	1.30-1.50	2-6	0.05-0.07	0.0-2.9	0.0-0.5	.05
	19-60	0-5	1.40-1.65	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02
	0-4	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.15

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
715: Weirman-----	0-5 5-15 15-60	0-10 2-5 0-2	1.15-1.40 1.35-1.55 1.50-1.70	2-6 6-20 20-100	0.10-0.13 0.07-0.10 0.01-0.02	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 1.0-2.0 0.0-0.5	.15 .10 .05
717: Fortyday-----	0-3 3-6 6-15 15-25	10-15 10-15 18-27 ---	1.25-1.35 1.25-1.35 1.30-1.40 ---	0.6-2 0.6-2 0.6-2 ---	0.08-0.12 0.08-0.12 0.06-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	0.5-1.0 0.5-1.0 0.0-0.5 ---	.15 .17 .05 ---
Drino-----	0-3 3-7 7-19 19-38 38-48	10-18 10-18 15-27 18-27 ---	1.15-1.35 1.15-1.35 1.30-1.50 1.30-1.50 ---	0.6-2 0.6-2 0.6-2 0.6-2 ---	0.08-0.12 0.08-0.12 0.08-0.12 0.07-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 ---	0.5-1.0 0.5-1.0 0.0-1.0 0.0-0.5 ---	.10 .15 .15 .10 ---
Nevo-----	0-2 2-8 8-18	10-18 25-33 ---	1.25-1.35 1.30-1.40 ---	2-6 0.2-0.6 ---	0.06-0.14 0.05-0.14 ---	0.0-2.9 0.0-2.9 ---	0.5-1.0 0.0-1.0 ---	.05 .10 ---
718: Fortyday-----	0-3 3-6 6-15 15-25	10-15 10-15 18-27 ---	1.25-1.35 1.25-1.35 1.30-1.40 ---	0.6-2 0.6-2 0.6-2 ---	0.08-0.12 0.08-0.12 0.06-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 ---	0.5-1.0 0.5-1.0 0.0-0.5 ---	.15 .17 .05 ---
Drino-----	0-3 3-7 7-19 19-38 38-48	10-18 10-18 15-27 18-27 ---	1.15-1.35 1.15-1.35 1.30-1.50 1.30-1.50 ---	0.6-2 0.6-2 0.6-2 0.6-2 ---	0.08-0.12 0.08-0.12 0.08-0.12 0.07-0.12 ---	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 ---	0.5-1.0 0.5-1.0 0.0-1.0 0.0-0.5 ---	.10 .15 .15 .10 ---
Nevo-----	0-2 2-8 8-18	10-18 25-33 ---	1.25-1.35 1.30-1.40 ---	0.6-2 0.2-0.6 ---	0.06-0.09 0.05-0.14 ---	0.0-2.9 0.0-2.9 ---	0.5-1.0 0.0-1.0 ---	.17 .10 ---
720: Nanum-----	0-6 6-15 15-28 28-35 35-60	22-27 25-33 27-35 27-35 27-35	1.15-1.35 1.15-1.40 1.15-1.40 1.25-1.40 1.25-1.40	0.6-2 0.2-0.6 0.2-0.6 0.2-0.6 0.2-0.6	0.11-0.13 0.17-0.20 0.15-0.20 0.08-0.11 0.07-0.10	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-5.0 2.0-5.0 1.0-2.0 1.0-2.0 0.0-2.0	.15 .28 .28 .10 .02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
724: Manastash-----	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
Durtash-----	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.20
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---
725: Argabak-----	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---
Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
741: Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-26	---	---	---	---	---	---	---
Vantage, thin surface	0-3	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	3-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
742: Drino-----	0-3	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.10
	3-7	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.15
	7-19	15-27	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-1.0	.15
	19-38	18-27	1.30-1.50	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.10
	38-48	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
742: Fortyday	0-3	10-15	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	0.5-1.0	.20
	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
744: Palerf	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
Vantage	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
745: Zen	0-7	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	7-12	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-27	18-35	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	0.5-1.0	.43
	27-30	18-38	1.30-1.50	0.6-2	0.14-0.19	3.0-5.9	0.5-1.0	.24
Benwy	30-40	---	---	---	---	---	---	---
	0-10	10-15	1.15-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-18	10-15	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	1.0-2.0	.49
	18-33	22-28	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.28
Laric	33-45	22-28	1.30-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.24
	45-55	---	---	0.01-0.2	0.00-0.00	---	---	---
	0-3	10-18	1.20-1.35	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.15
	3-9	23-30	1.30-1.40	0.2-0.6	0.13-0.17	0.0-2.9	1.0-2.0	.20
747: Palerf	9-19	---	---	---	---	---	---	---
	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
Ralock	35-45	---	---	---	---	---	---	---
	0-4	9-17	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	4-14	9-17	1.15-1.30	0.6-2	0.16-0.21	0.0-2.9	1.0-2.0	.32
	14-27	20-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	1.0-2.0	.43
	27-36	25-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.20
	36-60	25-40	1.35-1.55	0.2-0.6	0.09-0.12	3.0-5.9	0.0-0.5	.17

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
747: Vantage-----								
	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
748: Malaga-----								
	0-4	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.15
	4-9	5-15	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.20
	9-12	5-15	1.30-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.10
	12-19	5-15	1.30-1.50	2-6	0.05-0.07	0.0-2.9	0.0-0.5	.05
	19-60	0-5	1.40-1.65	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02
751: Vantage-----								
	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Clerf-----								
	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
Rubble land-----								
	0-60	---	---	---	---	---	---	---
755: Nevo-----								
	0-2	10-18	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	0.5-1.0	.17
	2-8	25-33	1.30-1.40	0.2-0.6	0.05-0.14	0.0-2.9	0.0-1.0	.10
	8-18	---	---	---	---	---	---	---
Fortyday-----								
	0-3	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.15
	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
758: Schappy-----								
	0-4	5-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	0.5-1.0	.49
	4-32	10-15	1.15-1.40	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.55
	32-43	15-25	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	0.0-0.5	.32
	43-51	15-28	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.15
	51-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
758: Fortyday	0-3	10-15	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	0.5-1.0	.20
	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
772: Haploxerolls	0-17	5-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	17-60	5-15	1.25-1.55	0.6-2	0.17-0.21	0.0-2.9	0.5-2.0	.32
	0-5	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.05
	5-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
Weirman	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
	0-5	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	1.0-3.0	.15
	5-12	5-15	1.20-1.40	0.6-2	0.08-0.12	0.0-2.9	1.0-3.0	.10
	12-18	5-15	1.30-1.50	0.6-6	0.06-0.12	0.0-2.9	1.0-2.0	.05
Aguolls	18-60	0-5	1.40-1.65	20-100	0.02-0.05	0.0-2.9	0.0-1.0	.05
	0-3	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.10
	3-7	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.15
	7-19	15-27	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-1.0	.15
774: Drino	19-38	18-27	1.30-1.50	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.10
	38-48	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
Rubble land	0-7	15-22	1.15-1.35	0.6-2	0.13-0.15	0.0-2.9	1.0-2.0	.24
	7-15	24-32	1.25-1.45	0.6-2	0.11-0.18	3.0-5.9	1.0-2.0	.20
	15-18	24-32	1.25-1.45	0.6-2	0.10-0.14	3.0-5.9	0.5-1.0	.15
	18-26	---	---	0.0015-0.06	0.00-0.00	---	---	---
787: Terlan	26-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.20
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
Durtash	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
787: Salah-----	0-9	15-20	1.10-1.35	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	9-17	22-30	1.30-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.5-2.0	.49
	17-21	30-38	1.30-1.50	0.2-0.6	0.13-0.17	3.0-5.9	0.5-1.0	.17
	21-31	---	---	0.0000-0.06	0.00-0.00	---	---	---
	31-60	---	---	0.0000-0.06	0.00-0.00	---	---	---
789: Deedale-----	0-12	30-40	1.15-1.30	0.2-0.6	0.19-0.21	3.0-5.9	3.0-5.0	.20
	12-25	45-60	1.15-1.30	0.0015-0.06	0.14-0.16	6.0-8.9	3.0-5.0	.20
	25-31	45-60	1.15-1.30	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	31-54	45-60	1.15-1.30	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	54-60	30-40	1.25-1.40	0.2-0.6	0.05-0.11	3.0-5.9	0.5-2.0	.05
790: Mitta-----	0-6	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.32
	6-15	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-5.0	.37
	15-34	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	34-49	25-30	1.15-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-2.0	.43
	49-60	25-30	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.49
791: Mitta, drained-----	0-6	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.32
	6-15	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-5.0	.37
	15-34	19-25	1.00-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	34-49	25-30	1.15-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-2.0	.43
	49-60	25-30	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.49
792: Brickmill-----	0-12	15-20	1.15-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.15
	12-28	15-20	1.30-1.50	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	28-38	15-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.02
	38-49	12-15	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.05
	49-60	0-10	1.40-1.55	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
793: Zillah-----	0-7	12-18	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	2.0-5.0	.37
	7-15	12-18	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	2.0-5.0	.43
	15-32	12-18	1.20-1.45	0.6-2	0.18-0.21	0.0-2.9	0.5-1.0	.55
	32-51	12-18	1.20-1.45	0.6-2	0.18-0.21	0.0-2.9	0.5-1.0	.43
	51-60	0-5	1.40-1.65	6-20	0.06-0.08	0.0-2.9	0.0-0.5	.10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
793: Kayak	0-6	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-3.0	.24
	6-17	18-25	1.15-1.40	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.20
	17-29	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.24
	29-39	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.24
	39-60	0-2	1.25-1.45	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
794: Kayak	0-6	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-3.0	.24
	6-17	18-25	1.15-1.40	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.20
	17-29	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.24
	29-39	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.24
	39-60	0-2	1.25-1.45	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
Weirman	0-9	0-10	1.15-1.40	2-6	0.10-0.13	0.0-2.9	1.0-2.0	.15
	9-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
795: Nack	0-6	18-25	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	2.0-4.0	.15
	6-15	25-30	1.15-1.40	0.2-0.6	0.11-0.16	3.0-5.9	1.0-3.0	.32
	15-60	25-40	1.30-1.50	0.2-0.6	0.04-0.08	3.0-5.9	1.0-2.0	.02
Opnish	0-8	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.24
	8-13	26-33	1.15-1.40	0.2-0.6	0.17-0.20	3.0-5.9	1.0-4.0	.32
	13-26	35-40	1.25-1.40	0.2-0.6	0.17-0.20	3.0-5.9	1.0-3.0	.24
	26-60	35-40	1.25-1.40	0.2-0.6	0.15-0.20	3.0-5.9	0.5-3.0	.05
796: Brickmill	0-12	15-20	1.15-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.15
	12-28	15-20	1.30-1.50	0.6-2	0.05-0.11	0.0-2.9	0.5-2.0	.05
	28-38	15-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.02
	38-49	12-15	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.05
	49-60	0-10	1.40-1.55	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
Nack	0-6	18-25	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	2.0-4.0	.15
	6-15	25-30	1.15-1.40	0.2-0.6	0.11-0.16	3.0-5.9	1.0-3.0	.32
	15-60	25-40	1.30-1.50	0.2-0.6	0.04-0.08	3.0-5.9	1.0-2.0	.02
797: Brysill	0-9	10-20	1.10-1.30	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.32
	9-15	14-17	1.15-1.40	0.6-2	0.06-0.11	0.0-2.9	1.0-2.0	.15
	15-25	25-30	1.30-1.50	0.2-0.6	0.06-0.11	0.0-2.9	1.0-2.0	.05
	25-48	15-20	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-2.0	.02
	48-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
799: Brysill-----	0-9	14-17	1.15-1.40	0.6-2	0.11-0.16	0.0-2.9	1.0-3.0	.20
	9-15	14-17	1.15-1.40	0.6-2	0.06-0.11	0.0-2.9	1.0-2.0	.15
	15-25	25-30	1.30-1.50	0.2-0.6	0.06-0.11	0.0-2.9	1.0-2.0	.05
	25-48	15-20	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-2.0	.02
	48-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.05
800: Brysill-----	0-9	14-17	1.15-1.40	0.6-2	0.11-0.16	0.0-2.9	1.0-3.0	.20
	9-15	14-17	1.15-1.40	0.6-2	0.06-0.11	0.0-2.9	1.0-2.0	.15
	15-25	25-30	1.30-1.50	0.2-0.6	0.06-0.11	0.0-2.9	1.0-2.0	.05
	25-48	15-20	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-2.0	.02
	48-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.05
801: Brysill-----	0-9	14-17	1.15-1.40	0.6-2	0.11-0.16	0.0-2.9	1.0-3.0	.17
	9-15	14-17	1.15-1.40	0.6-2	0.06-0.11	0.0-2.9	1.0-2.0	.15
	15-25	25-30	1.30-1.50	0.2-0.6	0.06-0.11	0.0-2.9	1.0-2.0	.05
	25-48	15-20	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-2.0	.02
	48-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.05
802: Brysill-----	0-9	14-17	1.15-1.40	0.6-2	0.11-0.16	0.0-2.9	1.0-3.0	.17
	9-15	14-17	1.15-1.40	0.6-2	0.06-0.11	0.0-2.9	1.0-2.0	.15
	15-25	25-30	1.30-1.50	0.2-0.6	0.06-0.11	0.0-2.9	1.0-2.0	.05
	25-48	15-20	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-2.0	.02
	48-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.05
803: Brysill-----	0-9	14-17	1.15-1.40	0.6-2	0.11-0.16	0.0-2.9	1.0-3.0	.10
	9-15	14-17	1.15-1.40	0.6-2	0.06-0.11	0.0-2.9	1.0-2.0	.15
	15-25	25-30	1.30-1.50	0.2-0.6	0.06-0.11	0.0-2.9	1.0-2.0	.05
	25-48	15-20	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	0.5-2.0	.02
	48-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.05
804: Benwy-----	0-10	10-15	1.15-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-18	10-15	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	1.0-2.0	.49
	18-33	22-28	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.28
	33-45	22-28	1.30-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.02
	45-55	---	---	0.01-0.2	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
806: Weirman, very gravelly sandy loam--	0-5 5-15 15-60	5-8 2-5 0-2	1.15-1.40 1.35-1.55 1.50-1.70	2-6 6-20 20-100	0.08-0.11 0.07-0.10 0.01-0.02	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 1.0-2.0 0.0-0.5	.10 .10 .05
Weirman, very cobbly sandy loam-----	0-4 4-15 15-60	5-8 2-5 0-2	1.20-1.40 1.35-1.55 1.50-1.70	0.6-6 6-20 20-100	0.07-0.10 0.07-0.10 0.01-0.02	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 1.0-2.0 0.0-0.5	.05 .10 .05
807: Brysill-----	0-9 9-15 15-25 25-48 48-60	14-17 14-17 25-30 15-20 0-10	1.15-1.40 1.15-1.40 1.30-1.50 1.30-1.50 1.40-1.50	0.6-2 0.6-2 0.2-0.6 0.6-2 6-20	0.11-0.16 0.06-0.11 0.06-0.11 0.05-0.10 0.03-0.04	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	1.0-3.0 1.0-2.0 1.0-2.0 0.5-2.0 0.0-0.5	.17 .15 .05 .02 .05
Ackna-----	0-8 8-18 18-28 28-42 42-55 55-60	18-25 18-25 25-27 25-30 17-30 0-10	1.15-1.40 1.15-1.40 1.25-1.40 1.25-1.40 1.25-1.40 1.40-1.55	0.6-2 0.6-2 0.6-2 0.6-2 0.6-2	0.17-0.20 0.17-0.20 0.15-0.20 0.08-0.11 0.04-0.08 0.03-0.04	0.0-2.9 0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9 0.0-2.9	1.0-3.0 1.0-3.0 1.0-2.0 0.5-2.0 0.5-1.0 0.0-0.5	.24 .32 .32 .05 .05 .02
809: Weirman-----	0-5 5-15 15-60	5-8 2-5 0-2	1.15-1.40 1.35-1.55 1.50-1.70	2-6 6-20 20-100	0.08-0.11 0.07-0.10 0.01-0.02	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 1.0-2.0 0.0-0.5	.10 .10 .05
Kayak-----	0-6 6-17 17-29 29-39 39-60	5-10 18-25 18-25 18-25 0-2	1.10-1.30 1.15-1.40 1.20-1.40 1.20-1.40 1.25-1.45	2-6 0.6-2 0.6-2 0.6-2 6-20	0.11-0.13 0.13-0.16 0.10-0.14 0.10-0.14 0.03-0.04	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	1.0-3.0 2.0-3.0 1.0-3.0 1.0-2.0 0.0-0.5	.20 .20 .24 .24 .02
Zillah-----	0-7 7-15 15-32 32-51 51-60	12-18 12-18 12-18 12-18 0-5	1.15-1.40 1.15-1.40 1.20-1.45 1.20-1.45 1.40-1.65	0.6-2 0.6-2 0.6-2 0.6-2 6-20	0.19-0.21 0.19-0.21 0.18-0.21 0.18-0.21 0.06-0.08	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	2.0-5.0 2.0-5.0 0.5-1.0 0.5-1.0 0.0-0.5	.37 .43 .55 .43 .10

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
814: Argixerolls, moist, north slopes-----								
	0-4	15-27	1.20-1.35	0.6-2	0.11-0.14	3.0-5.9	2.0-4.0	.15
	4-12	27-40	1.25-1.35	0.2-0.6	0.18-0.21	3.0-5.9	1.0-2.0	.15
	12-60	35-55	1.25-1.40	0.2-0.6	0.07-0.15	6.0-8.9	0.0-2.0	.10
815: Argixerolls, moist, south slopes-----								
	0-6	15-27	1.20-1.35	0.6-2	0.11-0.14	3.0-5.9	1.0-3.0	.15
	6-12	27-40	1.25-1.35	0.2-0.6	0.18-0.21	3.0-5.9	1.0-2.0	.15
	12-22	27-40	1.25-1.40	0.2-0.6	0.10-0.15	3.0-5.9	1.0-2.0	.15
816: Patron, cobbly ashy silt loam-----								
	0-12	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	2.0-3.0	.20
	12-35	35-45	1.20-1.35	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.17
	35-60	35-50	1.30-1.50	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.10
Patron-----								
	0-12	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	2.0-3.0	.20
	12-35	35-45	1.20-1.35	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.17
	35-60	35-50	1.30-1.50	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.10
817: Manastash-----								
	0-5	15-20	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-4.0	.32
	5-10	15-20	1.25-1.45	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43
	10-15	18-27	1.25-1.50	0.6-2	0.14-0.17	3.0-5.9	0.5-2.0	.37
818: Umtanum-----								
	15-22	35-55	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-2.0	.28
	22-25	35-65	1.30-1.50	0.06-0.2	0.10-0.17	6.0-8.9	0.5-1.0	.15
	25-42	---	---	0.0015-0.06	0.00-0.00	---	---	---
819: Millhouse-----								
	42-60	---	---	0.0015-0.06	0.00-0.00	---	---	---
	0-9	20-25	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.28
	9-16	25-33	1.15-1.40	0.2-0.6	0.19-0.21	3.0-5.9	3.0-5.0	.32
819: Millhouse-----								
	16-42	35-45	1.20-1.40	0.2-0.6	0.14-0.19	3.0-5.9	2.0-4.0	.28
	42-60	27-45	1.20-1.40	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.37
	0-4	14-17	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	2.0-4.0	.15
819: Millhouse-----								
	4-14	14-17	1.15-1.40	0.6-2	0.05-0.10	0.0-2.9	2.0-4.0	.10
	14-28	20-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	1.0-4.0	.05
	28-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
820: Modsel, ashy loam-----	0-7	20-25	1.15-1.35	0.6-2	0.17-0.20	0.0-2.9	2.0-4.0	.28
	7-10	30-35	1.15-1.40	0.2-0.6	0.13-0.19	3.0-5.9	1.0-3.0	.32
	10-16	35-40	1.30-1.50	0.2-0.6	0.10-0.18	3.0-5.9	1.0-3.0	.15
	16-20	38-45	1.30-1.50	0.06-0.2	0.05-0.13	3.0-5.9	1.0-3.0	.05
	20-60	30-40	1.30-1.50	0.2-0.6	0.05-0.13	3.0-5.9	0.5-2.0	.02
Modsel, cobbly ashy loam-----	0-7	20-25	1.15-1.40	0.6-2	0.14-0.17	0.0-2.9	2.0-4.0	.15
	7-10	30-35	1.15-1.40	0.2-0.6	0.13-0.19	3.0-5.9	1.0-3.0	.32
	10-16	35-40	1.30-1.50	0.2-0.6	0.10-0.18	3.0-5.9	1.0-3.0	.15
	16-20	38-45	1.30-1.50	0.06-0.2	0.05-0.13	3.0-5.9	1.0-3.0	.05
	20-60	30-40	1.30-1.50	0.2-0.6	0.05-0.13	3.0-5.9	0.5-2.0	.02
822: Reeser-----	0-6	27-32	1.15-1.45	0.2-0.6	0.18-0.22	3.0-5.9	1.0-3.0	.28
	6-13	25-32	1.15-1.45	0.2-0.6	0.12-0.19	3.0-5.9	1.0-2.0	.37
	13-22	35-45	1.25-1.50	0.06-0.2	0.10-0.18	6.0-8.9	0.5-2.0	.32
	22-26	---	---	0.0015-0.06	---	---	---	---
	26-58	---	---	0.0015-0.06	---	---	---	---
	58-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Reelow-----	0-2	27-32	1.15-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-3.0	.17
	2-6	25-37	1.15-1.45	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.20
	6-14	40-50	1.30-1.45	0.06-0.2	0.09-0.14	6.0-8.9	0.5-2.0	.15
	14-18	---	---	0.0000-0.06	0.00-0.00	---	---	---
	18-56	---	---	0.0000-0.06	0.00-0.00	---	---	---
	56-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Sketter-----	0-6	18-22	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	1.0-3.0	.15
	6-10	24-27	1.15-1.40	0.2-0.6	0.11-0.15	0.0-2.9	1.0-3.0	.20
	10-21	35-45	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	1.0-2.0	.02
	21-24	---	---	0.0000-0.06	0.00-0.00	---	---	---
	24-55	---	---	0.0000-0.06	0.00-0.00	---	---	---
	55-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
823: Millhouse-----	0-4	14-17	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	2.0-4.0	.15
	4-14	14-17	1.15-1.40	0.6-2	0.05-0.10	0.0-2.9	2.0-4.0	.10
	14-28	20-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	1.0-4.0	.05
	28-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
824: Pachneum-----	0-8	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.24
	8-18	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.32
	18-26	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.28
	26-33	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.32
	33-47	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	47-60	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
825: Pachneum-----	0-8	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.24
	8-18	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.32
	18-26	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.28
	26-33	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.32
	33-47	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	47-60	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
828: Swauk-----	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24
	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
829: Swauk-----	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24
	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24
830: Swauk-----	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24
	0-7	14-18	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	7-28	16-25	1.35-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-2.0	.49
Qualla-----	28-38	17-25	1.50-1.60	0.6-2	0.17-0.20	3.0-5.9	0.0-1.0	.55
	38-42	29-40	1.55-1.65	0.06-0.2	0.08-0.10	3.0-5.9	0.0-1.0	.37
	42-60	27-35	1.50-1.65	0.06-0.2	0.02-0.04	3.0-5.9	0.0-0.5	.43
	0-7	14-18	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	7-28	16-25	1.35-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-2.0	.49
	28-38	17-25	1.50-1.60	0.6-2	0.17-0.20	3.0-5.9	0.0-1.0	.55
831: Qualla-----	38-42	29-40	1.55-1.65	0.06-0.2	0.08-0.10	3.0-5.9	0.0-1.0	.37
	42-60	27-35	1.50-1.65	0.06-0.2	0.02-0.04	3.0-5.9	0.0-0.5	.43
	0-7	14-18	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	7-28	16-25	1.35-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-2.0	.49
	28-38	17-25	1.50-1.60	0.6-2	0.17-0.20	3.0-5.9	0.0-1.0	.55
	38-42	29-40	1.55-1.65	0.06-0.2	0.08-0.10	3.0-5.9	0.0-1.0	.37

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
832: Qualla	0-7	14-18	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	7-28	16-25	1.35-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-2.0	.49
	28-38	17-25	1.50-1.60	0.6-2	0.17-0.20	3.0-5.9	0.0-1.0	.55
	38-42	29-40	1.55-1.65	0.06-0.2	0.08-0.10	3.0-5.9	0.0-1.0	.37
	42-60	27-35	1.50-1.65	0.06-0.2	0.02-0.04	3.0-5.9	0.0-0.5	.43
833: Swauk	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24
835: Swauk	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24
Qualla	0-7	14-18	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	7-28	16-25	1.35-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-2.0	.49
	28-38	17-25	1.50-1.60	0.6-2	0.17-0.20	3.0-5.9	0.0-1.0	.55
	38-42	29-40	1.55-1.65	0.06-0.2	0.08-0.10	3.0-5.9	0.0-1.0	.37
	42-60	27-35	1.50-1.65	0.06-0.2	0.02-0.04	3.0-5.9	0.0-0.5	.43
838: Nosai	0-15	25-27	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	2.0-5.0	.28
	15-26	25-30	1.15-1.40	0.2-0.6	0.19-0.21	3.0-5.9	2.0-5.0	.28
	26-32	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.28
	32-44	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-2.0	.20
	44-60	20-30	1.20-1.40	0.2-2	0.08-0.11	3.0-5.9	0.0-0.5	.05
839: Vanderbilt	0-8	20-24	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	2.0-4.0	.24
	8-28	20-24	1.15-1.40	0.6-2	0.19-0.21	0.0-2.9	2.0-4.0	.28
	28-38	27-32	1.15-1.40	0.2-0.6	0.19-0.21	0.0-2.9	1.0-3.0	.32
	38-60	27-32	1.15-1.40	0.2-0.6	0.19-0.21	0.0-2.9	0.5-2.0	.32
841: Metser	0-9	30-40	1.10-1.35	0.2-0.6	0.19-0.21	3.0-5.9	3.0-5.0	.20
	9-15	40-55	1.15-1.40	0.0015-0.06	0.19-0.21	3.0-5.9	3.0-5.0	.24
	15-30	40-55	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	30-37	40-55	1.25-1.40	0.06-0.2	0.06-0.09	3.0-5.9	0.5-2.0	.05
	37-60	30-45	1.25-1.40	0.2-0.6	0.05-0.09	3.0-5.9	0.5-2.0	.02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
842: Durtash-----	0-5	15-25	1.15-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.17
	5-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---
843: Reelow-----	0-2	27-32	1.15-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-3.0	.17
	2-6	25-37	1.15-1.45	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.20
	6-14	40-50	1.30-1.45	0.06-0.2	0.09-0.14	6.0-8.9	0.5-2.0	.15
	14-18	---	---	0.0000-0.06	0.00-0.00	---	---	---
	18-56	---	---	0.0000-0.06	0.00-0.00	---	---	---
Reeser-----	56-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
	0-6	27-32	1.15-1.45	0.2-0.6	0.18-0.22	3.0-5.9	1.0-3.0	.28
	6-13	25-32	1.15-1.45	0.2-0.6	0.12-0.19	3.0-5.9	1.0-2.0	.37
	13-22	35-45	1.25-1.50	0.06-0.2	0.10-0.18	6.0-8.9	0.5-2.0	.32
	22-26	---	---	0.0015-0.06	---	---	---	---
Sketter-----	26-58	---	---	0.0015-0.06	---	---	---	---
	58-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
	0-6	18-22	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	1.0-3.0	.15
	6-10	24-27	1.15-1.40	0.2-0.6	0.11-0.15	0.0-2.9	1.0-3.0	.20
	10-21	35-45	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	1.0-2.0	.02
844: Metmill, very gravelly ashy loam---	21-24	---	---	0.0000-0.06	0.00-0.00	---	---	---
	24-55	---	---	0.0000-0.06	0.00-0.00	---	---	---
	55-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
	0-6	22-27	1.15-1.40	0.6-2	0.10-0.15	0.0-2.9	2.0-4.0	.10
	6-14	25-30	1.15-1.40	0.6-2	0.15-0.19	0.0-2.9	2.0-4.0	.17
850: Reelow-----	14-22	27-34	1.30-1.50	0.2-0.6	0.09-0.15	3.0-5.9	1.0-3.0	.10
	22-60	27-34	1.30-1.50	0.2-0.6	0.05-0.13	3.0-5.9	0.5-2.0	.05
	0-2	27-32	1.15-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-3.0	.17
	2-6	25-37	1.15-1.45	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.20
	6-14	40-50	1.30-1.45	0.06-0.2	0.09-0.14	6.0-8.9	0.5-2.0	.15
Reelow-----	14-18	---	---	0.0000-0.06	0.00-0.00	---	---	---
	18-56	---	---	0.0000-0.06	0.00-0.00	---	---	---
	56-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
	0-2	27-32	1.15-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-3.0	.17
	2-6	25-37	1.15-1.45	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.20

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
852: Durtash-----	0-7	15-25	1.15-1.35	0.6-2	0.17-0.19	0.0-2.9	1.0-2.0	.37
	7-14	35-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.10
	14-19	40-60	1.25-1.45	0.06-0.2	0.08-0.11	3.0-5.9	0.5-2.0	.05
	19-29	---	---	0.01-0.06	0.00-0.00	---	---	---
	29-60	---	---	0.01-0.06	0.00-0.00	---	---	---
853: Nint-----	0-9	15-20	1.10-1.30	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.17
	9-13	27-33	1.25-1.45	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.10
	13-19	27-35	1.25-1.45	0.2-0.6	0.05-0.13	0.0-2.9	1.0-2.0	.10
	19-38	27-35	1.25-1.45	0.2-0.6	0.05-0.11	0.0-2.9	0.5-2.0	.10
	38-48	---	---	---	---	---	---	---
McDaniel-----	0-14	15-20	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.15
	14-19	15-20	1.15-1.35	0.6-2	0.09-0.15	0.0-2.9	2.0-3.0	.17
	19-24	27-35	1.20-1.40	0.2-0.6	0.08-0.13	0.0-2.9	1.0-2.0	.10
	24-32	27-35	1.20-1.40	0.2-0.6	0.07-0.13	0.0-2.9	1.0-2.0	.10
	32-60	27-35	1.30-1.40	0.2-0.6	0.05-0.12	0.0-2.9	0.5-2.0	.05
Rubble land-----	0-60	---	---	---	---	---	---	---
854: Shinn-----	0-2	15-20	1.25-1.35	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-9	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	9-18	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Shushuskin-----	0-4	18-22	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.28
	4-8	18-22	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	8-13	18-22	1.10-1.30	0.6-2	0.18-0.21	3.0-5.9	1.0-2.0	.37
	13-19	25-35	1.30-1.45	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.37
	19-23	28-35	1.30-1.45	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.32
	23-32	28-35	1.30-1.45	0.2-0.6	0.12-0.18	3.0-5.9	1.0-2.0	.10
	32-42	---	---	---	---	---	---	---
855: Swauk-----	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
855: Elkheights	0-8	13-15	1.25-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	8-19	19-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	19-41	20-25	1.45-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37
	41-56	25-30	1.45-1.55	0.2-0.6	0.15-0.17	3.0-5.9	0.0-0.5	.28
	56-60	25-35	1.70-2.00	0.06-0.2	0.00-0.00	3.0-5.9	0.0-0.5	.10
Lablue	0-2	20-25	1.15-1.45	0.2-0.6	0.09-0.12	0.0-2.9	1.0-3.0	.10
	2-5	27-30	1.20-1.35	0.2-0.6	0.15-0.19	3.0-5.9	1.0-2.0	.37
	5-8	35-45	1.25-1.45	0.06-0.2	0.12-0.17	3.0-5.9	1.0-2.0	.15
	8-11	---	---	0.0000-0.06	0.00-0.00	---	---	---
	11-37	---	---	0.0000-0.06	0.00-0.00	---	---	---
	37-60	5-15	1.30-1.50	2-6	0.00-0.00	0.0-2.9	0.0-0.5	.05
858: Shinn	0-2	15-20	1.25-1.35	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-9	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	9-18	---	---	---	---	---	---	---
Pachneum	0-8	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.24
	8-18	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.32
	18-26	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.28
	26-33	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.32
	33-47	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	47-60	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
Nint	0-9	15-20	1.10-1.30	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.17
	9-13	27-33	1.25-1.45	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.10
	13-19	27-35	1.25-1.45	0.2-0.6	0.05-0.13	0.0-2.9	1.0-2.0	.10
	19-38	27-35	1.25-1.45	0.2-0.6	0.05-0.11	0.0-2.9	0.5-2.0	.10
	38-48	---	---	---	---	---	---	---
860: Laufer	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-3.0	.10
	3-7	27-30	1.15-1.35	0.2-0.6	0.09-0.14	0.0-2.9	1.0-3.0	.15
	7-10	35-40	1.25-1.45	0.2-0.6	0.09-0.14	0.0-2.9	1.0-2.0	.10
	10-15	35-45	1.30-1.50	0.2-0.6	0.05-0.12	3.0-5.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Thiessen	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	3.0-5.9	2.0-3.0	.10
	3-9	35-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-22	35-45	1.20-1.35	0.2-0.6	0.06-0.10	3.0-5.9	1.0-2.0	.05
	22-32	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
862: Millhouse-----	0-4	14-17	1.15-1.40	0.6-2	0.05-0.10	0.0-2.9	2.0-4.0	.10
	4-14	14-17	1.15-1.40	0.6-2	0.05-0.10	0.0-2.9	2.0-4.0	.10
	14-28	20-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	1.0-4.0	.05
	28-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
864: Reelow-----	0-3	20-25	1.15-1.45	0.6-2	0.09-0.12	3.0-5.9	1.0-3.0	.10
	3-6	25-37	1.15-1.45	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.20
	6-14	40-50	1.30-1.45	0.06-0.2	0.09-0.14	6.0-8.9	0.5-2.0	.15
	14-18	---	---	0.0000-0.06	0.00-0.00	---	---	---
	18-56	---	---	0.0000-0.06	0.00-0.00	---	---	---
	56-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
868: Reelow-----	0-2	20-25	1.15-1.45	0.6-2	0.19-0.21	3.0-5.9	1.0-3.0	.10
	2-6	25-37	1.15-1.45	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.20
	6-14	40-50	1.30-1.45	0.06-0.2	0.09-0.14	6.0-8.9	0.5-2.0	.15
	14-18	---	---	0.0000-0.06	0.00-0.00	---	---	---
	18-56	---	---	0.0000-0.06	0.00-0.00	---	---	---
	56-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Reeser-----	0-6	27-32	1.15-1.45	0.2-0.6	0.18-0.22	3.0-5.9	1.0-3.0	.28
	6-13	25-32	1.15-1.45	0.2-0.6	0.12-0.19	3.0-5.9	1.0-2.0	.37
	13-22	35-45	1.25-1.50	0.06-0.2	0.10-0.18	6.0-8.9	0.5-2.0	.32
	22-26	---	---	0.0015-0.06	---	---	---	---
	26-58	---	---	0.0015-0.06	---	---	---	---
	58-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Lablue-----	0-2	20-25	1.15-1.45	0.2-0.6	0.09-0.12	0.0-2.9	1.0-3.0	.10
	2-5	27-30	1.20-1.35	0.2-0.6	0.15-0.19	3.0-5.9	1.0-2.0	.37
869: Weirman, very gravelly sandy loam--	5-8	35-45	1.25-1.45	0.06-0.2	0.12-0.17	3.0-5.9	1.0-2.0	.15
	8-11	---	---	0.0000-0.06	0.00-0.00	---	---	---
	11-37	---	---	0.0000-0.06	0.00-0.00	---	---	---
	37-60	5-15	1.30-1.50	2-6	0.00-0.00	0.0-2.9	0.0-0.5	.05
Weirman, very cobbly sandy loam-----	0-5	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.10
	5-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
Weirman, very cobbly sandy loam-----	0-4	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.05
	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
870: Millhouse	0-4	14-17	1.15-1.40	0.6-2	0.15-0.18	3.0-5.9	2.0-4.0	.28
	4-14	14-17	1.15-1.40	0.6-2	0.05-0.10	0.0-2.9	2.0-4.0	.10
	14-28	20-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	1.0-4.0	.05
	28-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
Metser	0-9	30-40	1.10-1.35	0.2-0.6	0.19-0.21	3.0-5.9	3.0-5.0	.24
	9-15	40-55	1.15-1.40	0.0015-0.06	0.19-0.21	3.0-5.9	3.0-5.0	.24
	15-30	40-55	1.15-1.40	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	30-37	40-55	1.25-1.40	0.06-0.2	0.06-0.09	3.0-5.9	0.5-2.0	.05
	37-60	30-45	1.25-1.40	0.2-0.6	0.05-0.09	3.0-5.9	0.5-2.0	.02
871: Sketter	0-6	18-22	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	1.0-3.0	.15
	6-10	24-27	1.15-1.40	0.2-0.6	0.11-0.15	0.0-2.9	1.0-3.0	.20
	10-21	35-45	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	1.0-2.0	.02
	21-24	---	---	0.0000-0.06	0.00-0.00	---	---	---
	24-55	---	---	0.0000-0.06	0.00-0.00	---	---	---
	55-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Millhouse	0-4	14-17	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	2.0-4.0	.15
	4-14	14-17	1.15-1.40	0.6-2	0.05-0.10	0.0-2.9	2.0-4.0	.10
	14-28	20-25	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	1.0-4.0	.05
	28-60	0-10	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
Lablue	0-2	20-25	1.15-1.45	0.2-0.6	0.09-0.12	0.0-2.9	1.0-3.0	.10
	2-5	27-30	1.20-1.35	0.2-0.6	0.15-0.19	3.0-5.9	1.0-2.0	.37
	5-8	35-45	1.25-1.45	0.06-0.2	0.12-0.17	3.0-5.9	1.0-2.0	.15
	8-11	---	---	0.0000-0.06	0.00-0.00	---	---	---
	11-37	---	---	0.0000-0.06	0.00-0.00	---	---	---
	37-60	5-15	1.30-1.50	2-6	0.00-0.00	0.0-2.9	0.0-0.5	.05
872: Elkheights	0-8	13-15	1.25-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	8-19	19-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	19-41	20-25	1.45-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37
	41-56	25-30	1.45-1.55	0.2-0.6	0.15-0.17	3.0-5.9	0.0-0.5	.28
	56-60	25-35	1.70-2.00	0.06-0.2	0.00-0.00	3.0-5.9	0.0-0.5	.10
Swauk	0-5	15-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	5-18	27-35	1.35-1.55	0.2-0.6	0.16-0.20	3.0-5.9	0.5-2.0	.32
	18-31	40-50	1.40-1.55	0.06-0.2	0.09-0.15	6.0-8.9	0.5-1.0	.28
	31-60	30-35	1.60-1.90	0.0000-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.24

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
873: Lablue	0-2	20-25	1.15-1.45	0.2-0.6	0.09-0.12	0.0-2.9	1.0-3.0	.10
	2-5	27-30	1.20-1.35	0.2-0.6	0.15-0.19	3.0-5.9	1.0-2.0	.37
	5-8	35-45	1.25-1.45	0.06-0.2	0.12-0.17	3.0-5.9	1.0-2.0	.15
	8-11	---	---	0.0000-0.06	0.00-0.00	---	---	---
	11-37	---	---	0.0000-0.06	0.00-0.00	---	---	---
	37-60	5-15	1.30-1.50	2-6	0.00-0.00	0.0-2.9	0.0-0.5	.05
Sketter	0-6	18-22	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	1.0-3.0	.15
	6-10	24-27	1.15-1.40	0.2-0.6	0.11-0.15	0.0-2.9	1.0-3.0	.20
	10-21	35-45	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	1.0-2.0	.02
	21-24	---	---	0.0000-0.06	0.00-0.00	---	---	---
	24-55	---	---	0.0000-0.06	0.00-0.00	---	---	---
	55-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Reelow	0-2	20-25	1.15-1.45	0.2-0.6	0.09-0.12	3.0-5.9	1.0-3.0	.10
	2-6	25-37	1.15-1.45	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.20
	6-14	40-50	1.30-1.45	0.06-0.2	0.09-0.14	6.0-8.9	0.5-2.0	.15
	14-18	---	---	0.0000-0.06	0.00-0.00	---	---	---
	18-56	---	---	0.0000-0.06	0.00-0.00	---	---	---
	56-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
875: Reeser	0-6	27-32	1.15-1.45	0.2-0.6	0.18-0.22	3.0-5.9	1.0-3.0	.28
	6-13	25-32	1.15-1.45	0.2-0.6	0.12-0.19	3.0-5.9	1.0-2.0	.37
	13-22	35-45	1.25-1.50	0.06-0.2	0.10-0.18	6.0-8.9	0.5-2.0	.32
	22-26	---	---	0.0015-0.06	---	---	---	---
	26-58	---	---	0.0015-0.06	---	---	---	---
	58-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Sketter	0-6	18-22	1.15-1.40	0.6-2	0.11-0.15	0.0-2.9	1.0-3.0	.15
	6-10	24-27	1.15-1.40	0.2-0.6	0.11-0.15	0.0-2.9	1.0-3.0	.20
	10-21	35-45	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	1.0-2.0	.02
	21-24	---	---	0.0000-0.06	0.00-0.00	---	---	---
	24-55	---	---	0.0000-0.06	0.00-0.00	---	---	---
	55-60	10-15	1.20-1.40	2-6	0.00-0.00	0.0-2.9	0.0-1.0	.02
Weirman	0-4	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.10
	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
877: Maxhill	0-7	18-23	1.15-1.40	0.6-2	0.15-0.18	0.0-2.9	2.0-4.0	.28
	7-13	22-27	1.15-1.40	0.6-2	0.11-0.17	3.0-5.9	1.0-2.0	.20
	13-48	35-40	1.40-1.50	0.06-0.2	0.10-0.14	3.0-5.9	0.5-1.0	.05
	48-60	0-15	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
878: Nint-----	0-9	15-20	1.10-1.30	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.17
	9-13	27-33	1.25-1.45	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.10
	13-19	27-35	1.25-1.45	0.2-0.6	0.05-0.13	0.0-2.9	1.0-2.0	.10
	19-38	27-35	1.25-1.45	0.2-0.6	0.05-0.11	0.0-2.9	0.5-2.0	.10
	38-48	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
879: Patron, cobbly ashy silt loam-----	0-12	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	2.0-3.0	.20
	12-35	35-45	1.20-1.35	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.17
	35-60	35-50	1.30-1.50	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.10
	0-12	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	2.0-3.0	.20
	12-35	35-45	1.20-1.35	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.17
880: Elkheights-----	0-8	13-15	1.25-1.40	0.6-2	0.17-0.20	0.0-2.9	1.0-3.0	.32
	8-19	19-20	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.37
	19-41	20-25	1.45-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37
	41-56	25-30	1.45-1.55	0.2-0.6	0.15-0.17	3.0-5.9	0.0-0.5	.28
	56-60	25-35	1.70-2.00	0.06-0.2	0.00-0.00	3.0-5.9	0.0-0.5	.10
Qualla-----	0-7	14-18	1.35-1.50	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.32
	7-28	16-25	1.35-1.55	0.6-2	0.17-0.20	3.0-5.9	0.5-2.0	.49
	28-38	17-25	1.50-1.60	0.6-2	0.17-0.20	3.0-5.9	0.0-1.0	.55
	38-42	29-40	1.55-1.65	0.06-0.2	0.08-0.10	3.0-5.9	0.0-1.0	.37
	42-60	27-35	1.50-1.65	0.06-0.2	0.02-0.04	3.0-5.9	0.0-0.5	.43
882: Weirman, very gravelly sandy loam--	0-5	5-8	1.15-1.40	2-6	0.08-0.11	0.0-2.9	1.0-2.0	.10
	5-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
	0-4	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.05
Weirman, very cobbly sandy loam-----	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
882: Kayak	0-6	5-10	1.10-1.30	2-6	0.11-0.13	0.0-2.9	1.0-3.0	.20
	6-17	18-25	1.15-1.40	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.20
	17-29	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.24
	29-39	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.24
	39-60	0-2	1.25-1.45	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
883: Nint	0-9	15-20	1.10-1.30	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.17
	9-13	27-33	1.25-1.45	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.10
	13-19	27-35	1.25-1.45	0.2-0.6	0.05-0.13	0.0-2.9	1.0-2.0	.10
	19-38	27-35	1.25-1.45	0.2-0.6	0.05-0.11	0.0-2.9	0.5-2.0	.10
	38-48	---	---	---	---	---	---	---
McDaniel	0-14	15-20	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.15
	14-19	15-20	1.15-1.35	0.6-2	0.09-0.15	0.0-2.9	2.0-3.0	.17
	19-24	27-35	1.20-1.40	0.2-0.6	0.08-0.13	0.0-2.9	1.0-2.0	.10
	24-32	27-35	1.20-1.40	0.2-0.6	0.07-0.13	0.0-2.9	1.0-2.0	.10
	32-60	27-35	1.30-1.40	0.2-0.6	0.05-0.12	0.0-2.9	0.5-2.0	.05
Laufer	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-3.0	.10
	3-7	27-30	1.15-1.35	0.2-0.6	0.09-0.14	0.0-2.9	1.0-3.0	.15
	7-10	35-40	1.25-1.45	0.2-0.6	0.09-0.14	0.0-2.9	1.0-2.0	.10
	10-15	35-45	1.30-1.50	0.2-0.6	0.05-0.12	3.0-5.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
884: Maxhill	0-7	18-23	1.15-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-4.0	.10
	7-13	22-27	1.15-1.40	0.6-2	0.11-0.17	3.0-5.9	1.0-2.0	.20
	13-48	35-40	1.40-1.50	0.06-0.2	0.10-0.14	3.0-5.9	0.5-1.0	.05
	48-60	0-15	1.40-1.50	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
	---	---	---	---	---	---	---	---
885: Palerf	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
	---	---	---	---	---	---	---	---
Ralock	0-4	9-17	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	4-14	9-17	1.15-1.30	0.6-2	0.16-0.21	0.0-2.9	1.0-2.0	.32
	14-27	20-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	1.0-2.0	.43
	27-36	25-35	1.35-1.55	0.2-0.6	0.12-0.14	3.0-5.9	0.5-1.0	.20
	36-60	25-40	1.35-1.55	0.2-0.6	0.09-0.12	3.0-5.9	0.0-0.5	.17

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
885: Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
886: Camaspatch-----	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Whiskeydick-----	0-4	17-23	1.15-1.35	0.6-2	0.09-0.12	0.0-2.9	1.0-3.0	.10
	4-10	38-50	1.25-1.45	0.06-0.2	0.06-0.12	3.0-5.9	1.0-2.0	.10
	10-27	45-55	1.30-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-2.0	.05
	27-37	---	---	---	---	---	---	---
887: Lainand-----	0-6	15-25	1.10-1.30	0.6-2	0.15-0.19	0.0-2.9	2.0-3.0	.10
	6-12	15-25	1.10-1.30	0.6-2	0.13-0.18	0.0-2.9	1.0-3.0	.37
	12-20	15-25	1.15-1.30	0.6-2	0.08-0.15	0.0-2.9	1.0-3.0	.15
	20-41	30-35	1.30-1.40	0.2-0.6	0.05-0.12	0.0-2.9	0.5-1.0	.10
Blint-----	41-60	20-35	1.30-1.40	0.2-20	0.05-0.12	0.0-2.9	0.5-1.0	.05
	0-4	15-20	1.10-1.30	0.6-2	0.11-0.15	0.0-2.9	2.0-3.0	.10
	4-10	15-20	1.00-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	10-18	23-33	1.25-1.45	0.2-0.6	0.09-0.13	0.0-2.9	0.5-2.0	.15
Rubble land-----	18-22	23-33	1.25-1.45	0.2-0.6	0.03-0.13	0.0-2.9	0.5-2.0	.10
	22-32	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
889: Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Palerf-----	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
890: Camaspatch-----	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Tankssel-----	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
	28-38	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
891: Tankssel-----	0-4	15-25	1.10-1.30	0.6-2	0.14-0.18	0.0-2.9	2.0-3.0	.15
	4-8	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.20
	8-17	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	1.0-3.0	.15
	17-20	30-40	1.25-1.45	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	20-28	35-50	1.25-1.45	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.05
	28-38	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
892: Palerf-----	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
893: Rubble land-----	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
Camaspatch-----	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
894: Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---
Wipple-----	0-7	27-35	1.10-1.30	0.2-2	0.14-0.19	0.0-2.9	1.0-2.0	.10
	7-11	30-40	1.25-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-2.0	.10
	11-30	50-60	1.25-1.50	0.06-0.2	0.04-0.10	3.0-5.9	0.5-1.0	.05
	30-50	32-60	1.25-1.55	0.06-0.6	0.06-0.12	3.0-5.9	0.0-0.5	.10
896: Argabak-----	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---
	15-25	---	---	---	---	---	---	---
897: Nanum, flooded-----	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
898: Shinn-----	0-8	22-27	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-5.0	.24
	8-15	25-33	1.15-1.40	0.2-0.6	0.17-0.20	3.0-5.9	2.0-5.0	.28
	15-28	27-35	1.15-1.40	0.2-0.6	0.15-0.20	3.0-5.9	1.0-2.0	.28
	28-35	27-35	1.25-1.40	0.2-0.6	0.08-0.11	3.0-5.9	1.0-2.0	.10
Laufer-----	35-60	27-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-2.0	.02
	0-2	15-20	1.25-1.35	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-9	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
Laufer-----	9-18	---	---	---	---	---	---	---
	0-3	23-27	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-3.0	.10
	3-7	27-30	1.15-1.35	0.2-0.6	0.09-0.14	0.0-2.9	1.0-3.0	.15
	7-10	35-40	1.25-1.45	0.2-0.6	0.09-0.14	0.0-2.9	1.0-2.0	.10
10-15	35-45	35-45	1.30-1.50	0.2-0.6	0.05-0.12	3.0-5.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
898:								
Nint-----	0-9	15-20	1.10-1.30	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.17
	9-13	27-33	1.25-1.45	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.10
	13-19	27-35	1.25-1.45	0.2-0.6	0.05-0.13	0.0-2.9	1.0-2.0	.10
	19-38	27-35	1.25-1.45	0.2-0.6	0.05-0.11	0.0-2.9	0.5-2.0	.10
	38-48	---	---	---	---	---	---	---
899:								
Bedron-----	0-13	15-20	1.10-1.30	0.6-2	0.15-0.19	0.0-2.9	2.0-4.0	.20
	13-19	35-40	1.25-1.50	0.2-0.6	0.14-0.18	3.0-5.9	2.0-3.0	.24
	19-27	35-40	1.25-1.50	0.2-0.6	0.09-0.18	6.0-8.9	1.0-2.0	.28
	27-60	35-40	1.25-1.50	0.2-0.6	0.09-0.17	6.0-8.9	0.5-2.0	.10
Nint-----	0-9	15-20	1.10-1.30	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.17
	9-13	27-33	1.25-1.45	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.10
	13-19	27-35	1.25-1.45	0.2-0.6	0.05-0.13	0.0-2.9	1.0-2.0	.10
	19-38	27-35	1.25-1.45	0.2-0.6	0.05-0.11	0.0-2.9	0.5-2.0	.10
	38-48	---	---	---	---	---	---	---
900:								
Deedale, flooded-----	0-12	30-40	1.15-1.30	0.2-0.6	0.19-0.21	3.0-5.9	3.0-5.0	.20
	12-25	45-60	1.15-1.30	0.0015-0.06	0.14-0.16	6.0-8.9	3.0-5.0	.20
	25-31	45-60	1.15-1.30	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	31-54	45-60	1.15-1.30	0.0015-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.24
	54-60	30-40	1.25-1.40	0.2-0.6	0.05-0.11	3.0-5.9	0.5-2.0	.05
901:								
Niben-----	0-4	17-24	1.15-1.35	0.6-2	0.14-0.18	0.0-2.9	1.0-3.0	.32
	4-18	29-32	1.25-1.40	0.2-0.6	0.15-0.19	3.0-5.9	1.0-3.0	.32
	18-26	33-45	1.25-1.40	0.06-0.2	0.15-0.19	3.0-5.9	1.0-2.0	.28
	26-51	33-45	1.25-1.40	0.06-0.2	0.15-0.19	3.0-5.9	1.0-2.0	.28
	51-60	33-45	1.25-1.40	0.06-0.2	0.13-0.19	3.0-5.9	0.5-2.0	.28
Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Benwy-----	0-10	10-15	1.15-1.35	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-18	10-15	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	1.0-2.0	.49
	18-33	22-28	1.25-1.45	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.28
	33-45	22-28	1.30-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.24
	45-55	---	---	0.01-0.2	0.00-0.00	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
902: Patron-----	0-12	15-25	1.10-1.30	0.6-2	0.13-0.17	0.0-2.9	2.0-3.0	.20
	12-35	35-45	1.20-1.35	0.06-0.2	0.12-0.16	6.0-8.9	1.0-2.0	.17
	35-60	35-50	1.30-1.50	0.06-0.2	0.07-0.10	3.0-5.9	0.5-1.0	.10
Camaspatch-----	0-4	20-27	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	4-9	35-40	1.15-1.35	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.0	.10
	9-15	45-65	1.30-1.50	0.06-0.2	0.05-0.10	6.0-8.9	1.0-2.0	.05
	15-25	---	---	---	---	---	---	---
903: Marlic-----	0-6	17-23	1.15-1.35	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37
	6-15	27-30	1.25-1.40	0.2-0.6	0.16-0.18	3.0-5.9	1.0-2.0	.37
	15-18	35-40	1.25-1.40	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.17
	18-28	---	---	---	---	---	---	---
Zen-----	0-7	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.43
	7-12	12-15	1.20-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.49
	12-27	18-35	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	0.5-1.0	.43
	27-30	18-38	1.30-1.50	0.6-2	0.14-0.19	3.0-5.9	0.5-1.0	.24
	30-40	---	---	---	---	---	---	---
Laric-----	0-3	10-18	1.20-1.35	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.15
	3-9	23-30	1.30-1.40	0.2-0.6	0.13-0.17	0.0-2.9	1.0-2.0	.20
	9-19	---	---	---	---	---	---	---
905: Vantage-----	0-5	20-25	1.15-1.30	0.6-2	0.10-0.13	0.0-2.9	1.0-2.0	.15
	5-8	25-40	1.25-1.45	0.2-0.6	0.10-0.12	3.0-5.9	1.0-2.0	.15
	8-18	45-65	1.15-1.40	0.06-0.2	0.04-0.09	3.0-5.9	0.5-2.0	.05
	18-28	---	---	---	---	---	---	---
Niben-----	0-4	17-24	1.15-1.35	0.6-2	0.14-0.18	0.0-2.9	1.0-3.0	.32
	4-18	29-32	1.25-1.40	0.2-0.6	0.15-0.19	3.0-5.9	1.0-3.0	.32
	18-26	33-45	1.25-1.40	0.06-0.2	0.15-0.19	3.0-5.9	1.0-2.0	.28
	26-51	33-45	1.25-1.40	0.06-0.2	0.15-0.19	3.0-5.9	1.0-2.0	.28
	51-60	33-45	1.25-1.40	0.06-0.2	0.13-0.19	3.0-5.9	0.5-2.0	.28
Clerf-----	0-9	20-35	1.15-1.30	0.6-2	0.07-0.13	0.0-2.9	1.0-2.0	.10
	9-12	47-60	1.20-1.30	0.06-0.2	0.07-0.12	3.0-5.9	1.0-2.0	.10
	12-24	47-60	1.20-1.30	0.06-0.2	0.05-0.10	3.0-5.9	0.5-2.0	.05
	24-34	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
906:								
Levnik-----	0-4	17-24	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-8	30-40	1.25-1.40	0.2-0.6	0.16-0.18	3.0-5.9	0.5-1.0	.32
	8-13	35-45	1.25-1.40	0.06-0.2	0.14-0.17	3.0-5.9	0.0-1.0	.17
	13-16	40-50	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.05
	16-26	---	---	---	---	---	---	---
Nosser-----	0-3	17-23	1.15-1.35	0.6-2	0.12-0.14	0.0-2.9	0.5-1.0	.17
	3-10	28-33	1.25-1.40	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.37
	10-18	28-33	1.25-1.40	0.2-0.6	0.15-0.17	3.0-5.9	0.0-1.0	.20
	18-22	28-38	1.25-1.40	0.2-0.6	0.05-0.10	3.0-5.9	0.0-0.5	.05
	22-32	---	---	---	---	---	---	---
Nevo-----	0-2	10-18	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	0.5-1.0	.17
	2-8	25-33	1.30-1.40	0.2-0.6	0.05-0.14	0.0-2.9	0.0-1.0	.10
	8-18	---	---	---	---	---	---	---
910:								
Winchester-----	0-9	0-5	1.40-1.65	6-20	0.05-0.07	0.0-2.9	0.5-1.0	.02
	9-15	0-5	1.40-1.65	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.05
	15-60	0-5	1.40-1.65	6-20	0.05-0.07	0.0-2.9	0.0-0.5	.05
Sagehill-----	0-6	5-10	1.25-1.40	0.6-2	0.15-0.17	0.0-2.9	0.5-1.0	.32
	6-28	5-10	1.30-1.45	0.6-2	0.15-0.17	0.0-2.9	0.0-1.0	.37
	28-45	5-10	1.35-1.50	0.6-2	0.15-0.17	0.0-2.9	0.0-0.5	.37
	45-60	2-8	1.35-1.50	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.49
Burbank-----	0-5	0-5	1.40-1.60	6-20	0.04-0.07	0.0-2.9	0.5-1.0	.05
	5-17	0-5	1.40-1.60	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.10
	17-60	0-2	1.50-1.65	20-100	0.01-0.03	0.0-2.9	0.0-0.5	.02
911:								
Sagehill-----	0-6	5-10	1.25-1.40	0.6-2	0.15-0.17	0.0-2.9	0.5-1.0	.32
	6-28	5-10	1.30-1.45	0.6-2	0.15-0.17	0.0-2.9	0.0-1.0	.37
	28-45	5-10	1.35-1.50	0.6-2	0.15-0.17	0.0-2.9	0.0-0.5	.37
	45-60	2-8	1.35-1.50	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.49
Burbank-----	0-5	0-5	1.40-1.60	6-20	0.04-0.07	0.0-2.9	0.5-1.0	.05
	5-17	0-5	1.40-1.60	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.10
	17-60	0-2	1.50-1.65	20-100	0.01-0.03	0.0-2.9	0.0-0.5	.02
Malaga-----	0-4	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.15
	4-9	5-15	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.20
	9-12	5-15	1.30-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.10
	12-19	5-15	1.30-1.50	2-6	0.05-0.07	0.0-2.9	0.0-0.5	.05
	19-60	0-5	1.40-1.65	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
914: Disage								
	0-4	20-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-9	35-40	1.25-1.40	0.2-0.6	0.09-0.12	3.0-5.9	0.5-1.0	.10
	9-18	35-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.10
	18-28	---	---	---	---	---	---	---
Clenage								
	0-3	18-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.10
	3-16	31-35	1.25-1.40	0.2-0.6	0.12-0.15	3.0-5.9	0.0-1.0	.15
	16-25	41-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.05
	25-35	---	---	---	---	---	---	---
915: Nosser								
	0-3	17-23	1.15-1.35	0.6-2	0.12-0.14	0.0-2.9	0.5-1.0	.17
	3-10	28-33	1.25-1.40	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.37
	10-18	28-33	1.25-1.40	0.2-0.6	0.15-0.17	3.0-5.9	0.0-1.0	.20
	18-22	28-38	1.25-1.40	0.2-0.6	0.05-0.10	3.0-5.9	0.0-0.5	.05
	22-32	---	---	---	---	---	---	---
Levnik								
	0-4	17-24	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-8	30-40	1.25-1.40	0.2-0.6	0.16-0.18	3.0-5.9	0.5-1.0	.32
	8-13	35-45	1.25-1.40	0.06-0.2	0.14-0.17	3.0-5.9	0.0-1.0	.15
	13-16	40-50	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.05
	16-26	---	---	---	---	---	---	---
916: Nosser								
	0-3	17-23	1.15-1.35	0.6-2	0.12-0.14	0.0-2.9	0.5-1.0	.17
	3-10	28-33	1.25-1.40	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.37
	10-18	28-33	1.25-1.40	0.2-0.6	0.15-0.17	3.0-5.9	0.0-1.0	.20
	18-22	28-38	1.25-1.40	0.2-0.6	0.05-0.10	3.0-5.9	0.0-0.5	.05
	22-32	---	---	---	---	---	---	---
Levnik								
	0-4	17-24	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-8	30-40	1.25-1.40	0.2-0.6	0.16-0.18	3.0-5.9	0.5-1.0	.32
	8-13	35-45	1.25-1.40	0.06-0.2	0.14-0.17	3.0-5.9	0.0-1.0	.15
	13-16	40-50	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.05
	16-26	---	---	---	---	---	---	---
917: Navo								
	0-2	10-18	1.25-1.35	2-6	0.06-0.14	0.0-2.9	0.5-1.0	.05
	2-8	25-33	1.30-1.40	0.2-0.6	0.05-0.14	0.0-2.9	0.0-1.0	.10
	8-18	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Erosion	
							Organic matter	Kw
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	
920: Esquatzel								
	0-10	5-15	1.10-1.30	0.6-2	0.19-0.23	0.0-2.9	1.0-2.0	.49
	10-40	5-15	1.20-1.40	0.6-2	0.19-0.23	0.0-2.9	0.0-1.0	.64
Aquolls	40-60	5-15	1.25-1.55	0.6-2	0.18-0.23	0.0-2.9	0.0-1.0	.64
	0-5	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	1.0-3.0	.15
Weirman	5-12	5-15	1.20-1.40	0.6-2	0.08-0.12	0.0-2.9	1.0-3.0	.10
	12-18	5-15	1.30-1.50	0.6-6	0.06-0.12	0.0-2.9	1.0-2.0	.05
	18-60	0-5	1.40-1.65	20-100	0.02-0.05	0.0-2.9	0.0-1.0	.05
921: Fortyday								
	0-4	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.10
	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
Navo	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
	0-3	10-15	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	0.5-1.0	.20
Rock outcrop	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
922: Drino								
	0-2	10-18	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	0.5-1.0	.17
	2-8	25-33	1.30-1.40	0.2-0.6	0.05-0.14	0.0-2.9	0.0-1.0	.10
Fortyday	8-18	---	---	---	---	---	---	---
	0-60	---	---	---	---	---	---	---
923: Timmerman								
	0-3	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.10
	3-7	10-18	1.15-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.15
Rock outcrop	7-19	15-27	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-1.0	.15
	19-38	18-27	1.30-1.50	0.6-2	0.07-0.12	0.0-2.9	0.0-0.5	.10
	38-48	---	---	---	---	---	---	---
Fortyday								
	0-3	10-15	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	0.5-1.0	.20
	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
Timmerman	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
923: Timmerman								
	0-3	5-15	1.20-1.40	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.20
	3-15	5-15	1.35-1.55	2-6	0.11-0.15	0.0-2.9	0.0-0.5	.28
Rock outcrop	15-60	0-5	1.40-1.60	20-100	0.03-0.06	0.0-2.9	0.0-0.5	.20

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
923: Sagehill-----								
	0-6	5-10	1.25-1.40	0.6-2	0.15-0.17	0.0-2.9	0.5-1.0	.32
	6-28	5-10	1.30-1.45	0.6-2	0.15-0.17	0.0-2.9	0.0-1.0	.37
	28-45	5-10	1.35-1.50	0.6-2	0.15-0.17	0.0-2.9	0.0-0.5	.37
	45-60	2-8	1.35-1.50	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.49
924: Malaga, stony sandy loam-----								
	0-4	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.10
	4-9	5-15	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.20
	9-12	5-15	1.30-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.10
	12-19	5-15	1.30-1.50	2-6	0.05-0.07	0.0-2.9	0.0-0.5	.05
	19-60	0-5	1.40-1.65	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02
927: Disage-----								
	0-4	20-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.15
	4-9	35-40	1.25-1.40	0.2-0.6	0.09-0.12	3.0-5.9	0.5-1.0	.10
	9-18	35-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.10
	18-28	---	---	---	---	---	---	---
Schappy-----								
	0-4	5-15	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	0.5-1.0	.49
	4-32	10-15	1.15-1.40	0.6-2	0.17-0.21	0.0-2.9	0.5-1.0	.55
	32-43	15-25	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	0.0-0.5	.32
	43-51	15-28	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.15
	51-60	---	---	---	---	---	---	---
Clenage-----								
	0-3	18-25	1.15-1.35	0.6-2	0.08-0.10	0.0-2.9	0.5-1.0	.10
	3-16	31-35	1.25-1.40	0.2-0.6	0.12-0.15	3.0-5.9	0.0-1.0	.15
	16-25	41-55	1.25-1.40	0.06-0.2	0.05-0.10	3.0-5.9	0.0-0.5	.05
	25-35	---	---	---	---	---	---	---
928: Mozen-----								
	0-5	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.37
	5-13	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.43
	13-22	27-33	1.45-1.55	0.2-0.6	0.10-0.14	3.0-5.9	1.0-2.0	.32
	22-28	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	28-39	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	39-49	---	---	---	---	---	---	---
Argabak-----								
	0-2	15-20	1.25-1.35	0.6-2	0.06-0.09	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-16	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
928:								
Yrtneg-----	0-7	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.32
	7-10	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-16	27-33	1.35-1.55	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.37
	16-19	27-35	1.35-1.55	0.2-0.6	0.16-0.21	3.0-5.9	1.0-2.0	.37
	19-29	---	---	---	---	---	---	---
929:								
Neviot-----	0-6	14-27	1.10-1.30	0.6-2	0.11-0.17	0.0-2.9	2.0-3.0	.15
	6-12	14-27	1.10-1.30	0.6-2	0.15-0.18	0.0-2.9	1.0-3.0	.20
	12-22	15-25	1.25-1.50	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	22-40	15-25	1.25-1.50	0.6-2	0.09-0.13	0.0-2.9	0.5-2.0	.10
	40-49	15-25	1.25-1.50	0.6-2	0.06-0.13	0.0-2.9	0.5-1.0	.10
	49-60	15-18	1.25-1.50	0.6-2	0.05-0.09	0.0-2.9	0.0-0.5	.10
Palerf-----	0-9	15-25	1.10-1.30	0.6-2	0.11-0.14	3.0-5.9	2.0-3.0	.20
	9-27	35-45	1.20-1.30	0.06-0.2	0.10-0.12	3.0-5.9	1.0-2.0	.10
	27-35	35-60	1.20-1.30	0.06-0.2	0.04-0.13	3.0-5.9	0.5-2.0	.05
	35-45	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
932:								
Volinger-----	0-5	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.37
	5-17	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.43
	17-39	27-33	1.45-1.55	0.2-0.6	0.10-0.14	3.0-5.9	1.0-2.0	.37
	39-50	18-27	1.35-1.45	0.6-2	0.08-0.10	3.0-5.9	0.5-1.0	.43
	50-58	18-30	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.43
	58-60	18-30	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.43
Mozen-----	0-5	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.37
	5-13	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.43
	13-22	27-33	1.45-1.55	0.2-0.6	0.10-0.14	3.0-5.9	1.0-2.0	.32
	22-28	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	28-39	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	39-49	---	---	---	---	---	---	---
933:								
Mozen-----	0-5	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.37
	5-13	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.43
	13-22	27-33	1.45-1.55	0.2-0.6	0.10-0.14	3.0-5.9	1.0-2.0	.32
	22-28	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	28-39	22-33	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.37
	39-49	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
933: Volinger-----	0-5	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.37
	5-17	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.43
	17-39	27-33	1.45-1.55	0.2-0.6	0.10-0.14	3.0-5.9	1.0-2.0	.37
	39-50	18-27	1.35-1.45	0.6-2	0.08-0.10	3.0-5.9	0.5-1.0	.43
	50-58	18-30	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.43
	58-60	18-30	1.35-1.55	0.2-2	0.08-0.10	3.0-5.9	0.5-1.0	.43
Yrtneg-----	0-7	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	2.0-3.0	.32
	7-10	15-25	1.10-1.30	0.6-2	0.18-0.21	0.0-2.9	1.0-2.0	.43
	10-16	27-33	1.35-1.55	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.37
	16-19	27-35	1.35-1.55	0.2-0.6	0.16-0.21	3.0-5.9	1.0-2.0	.37
	19-29	---	---	---	---	---	---	---
936: Shushuskin-----	0-4	18-22	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.28
	4-8	18-22	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.37
	8-13	18-22	1.10-1.30	0.6-2	0.18-0.21	3.0-5.9	1.0-2.0	.37
	13-19	25-35	1.30-1.45	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.37
	19-23	28-35	1.30-1.45	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.32
	23-32	28-35	1.30-1.45	0.2-0.6	0.12-0.18	3.0-5.9	1.0-2.0	.10
	32-42	---	---	---	---	---	---	---
Pachneum-----	0-8	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	3.0-5.0	.24
	8-18	18-25	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	2.0-3.0	.32
	18-26	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.28
	26-33	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-2.0	.32
	33-47	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
	47-60	27-35	1.30-1.45	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.32
Shinn-----	0-2	15-20	1.25-1.35	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.15
	2-6	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	6-9	23-33	1.30-1.40	0.2-0.6	0.05-0.09	3.0-5.9	1.0-2.0	.05
	9-18	---	---	---	---	---	---	---
940: Renslow-----	0-11	5-10	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.55
	11-22	5-10	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.64
	22-36	10-18	1.30-1.50	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.55
	36-60	7-15	1.30-1.50	0.6-2	0.19-0.21	0.0-2.9	0.0-0.5	.64
941: Renslow-----	0-11	5-10	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.55
	11-22	5-10	1.15-1.30	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.64
	22-36	10-18	1.30-1.50	0.6-2	0.19-0.21	0.0-2.9	0.5-2.0	.55
	36-60	7-15	1.30-1.50	0.6-2	0.19-0.21	0.0-2.9	0.0-0.5	.64

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
944: Rubble land-----	0-60	---	---	---	---	---	---	---
Fortyday-----	0-3	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.15
	3-6	10-15	1.25-1.35	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.17
	6-15	18-27	1.30-1.40	0.6-2	0.06-0.12	0.0-2.9	0.0-0.5	.05
	15-25	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
948: Hardmauk-----	0-1	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	1-5	11-13	1.20-1.35	0.6-2	0.17-0.18	0.0-2.9	1.0-3.0	.37
	5-11	11-13	1.20-1.35	0.6-2	0.12-0.18	0.0-2.9	0.5-1.0	.49
	11-20	11-13	1.20-1.35	0.6-2	0.12-0.18	0.0-2.9	0.5-1.0	.49
	20-38	20-30	1.50-1.60	0.2-0.6	0.12-0.18	3.0-5.9	0.5-1.0	.17
	38-50	29-40	1.60-1.70	0.06-0.2	0.05-0.10	0.0-2.9	0.0-0.5	.10
	50-60	29-40	1.65-1.90	0.0000-0.06	0.00-0.00	0.0-2.9	0.0-0.5	.10
Teanaway-----	0-3	0-25	0.10-0.30	6-100	0.30-0.60	---	60-95	---
	3-7	10-13	1.20-1.40	0.6-2	0.18-0.21	0.0-2.9	1.0-3.0	.37
	7-22	10-13	1.35-1.55	0.6-2	0.18-0.21	0.0-2.9	0.5-2.0	.43
	22-42	17-30	1.55-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.37
	42-51	18-30	1.55-1.70	0.2-0.6	0.14-0.16	3.0-5.9	0.0-1.0	.43
	51-60	25-35	1.55-1.75	0.06-0.2	0.08-0.10	3.0-5.9	0.0-0.5	.24
954: Esquatzel-----	0-10	5-15	1.10-1.30	0.6-2	0.19-0.23	0.0-2.9	1.0-2.0	.49
	10-40	5-15	1.20-1.40	0.6-2	0.19-0.23	0.0-2.9	0.0-1.0	.64
	40-60	5-15	1.25-1.55	0.6-2	0.18-0.23	0.0-2.9	0.0-1.0	.64
955: Esquatzel-----	0-10	5-15	1.10-1.30	0.6-2	0.19-0.23	0.0-2.9	1.0-2.0	.49
	10-40	5-15	1.20-1.40	0.6-2	0.19-0.23	0.0-2.9	0.0-1.0	.64
	40-60	5-15	1.25-1.55	0.6-2	0.18-0.23	0.0-2.9	0.0-1.0	.64
Weirman-----	0-5	5-8	1.15-1.35	0.6-2	0.16-0.18	0.0-2.9	1.0-3.0	.28
	5-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
Weirman, very cobbly sandy loam-----	0-4	5-8	1.20-1.40	0.6-6	0.07-0.10	0.0-2.9	1.0-2.0	.10
	4-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
957:								
Kayak, rarely flooded	0-6	18-25	1.15-1.40	0.6-2	0.17-0.20	0.0-2.9	2.0-3.0	.24
	6-17	18-25	1.15-1.40	0.6-2	0.13-0.16	0.0-2.9	2.0-3.0	.20
	17-29	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.24
	29-39	18-25	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.24
	39-60	0-2	1.25-1.45	6-20	0.03-0.04	0.0-2.9	0.0-0.5	.02
Weirman, rarely flooded-----								
	0-9	0-10	1.15-1.40	2-6	0.10-0.13	0.0-2.9	1.0-2.0	.15
	9-15	2-5	1.35-1.55	6-20	0.07-0.10	0.0-2.9	1.0-2.0	.10
	15-60	0-2	1.50-1.70	20-100	0.01-0.02	0.0-2.9	0.0-0.5	.05
958:								
Grinrod-----								
	0-4	15-20	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.10
	4-10	15-20	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	1.0-2.0	.15
	10-27	24-35	1.30-1.50	0.2-0.6	0.05-0.12	0.0-2.9	0.5-2.0	.10
	27-37	---	---	---	---	---	---	---
Horseflat-----								
	0-4	15-25	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	1.0-2.0	.10
	4-9	15-27	1.30-1.40	0.2-0.6	0.08-0.14	0.0-2.9	1.0-2.0	.15
	9-16	23-33	1.30-1.40	0.2-0.6	0.06-0.12	0.0-2.9	1.0-2.0	.05
	16-26	---	---	---	---	---	---	---
960:								
Winchester-----								
	0-9	0-5	1.40-1.65	6-20	0.05-0.07	0.0-2.9	0.5-1.0	.02
	9-15	0-5	1.40-1.65	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.05
	15-60	0-5	1.40-1.65	6-20	0.05-0.07	0.0-2.9	0.0-0.5	.05
Burbank-----								
	0-5	0-5	1.40-1.60	6-20	0.04-0.07	0.0-2.9	0.5-1.0	.05
	5-17	0-5	1.40-1.60	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.10
	17-60	0-2	1.50-1.65	20-100	0.01-0.03	0.0-2.9	0.0-0.5	.02
Malaga-----								
	0-4	5-15	1.20-1.40	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.15
	4-9	5-15	1.30-1.50	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.20
	9-12	5-15	1.30-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.10
	12-19	5-15	1.30-1.50	2-6	0.05-0.07	0.0-2.9	0.0-0.5	.05
	19-60	0-5	1.40-1.65	20-100	0.03-0.05	0.0-2.9	0.0-0.5	.02
963:								
Dumps, landfill-----								
	---	---	---	---	---	---	---	---

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	Kw
966: Ellisforde-----	0-6 6-16 16-28 28-60	10-18 10-18 10-18 10-18	1.15-1.30 1.15-1.30 1.30-1.45 1.40-1.55	0.6-2 0.6-2 0.6-2 0.2-0.6	0.18-0.20 0.15-0.20 0.15-0.20 0.15-0.20	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.5-2.0 0.5-1.0 0.0-0.5	.43 .55 .55 .64
980: Rock Creek-----	0-2 2-14 14-18	20-27 35-45 ---	1.15-1.30 1.15-1.40 ---	0.6-2 0.2-0.6 ---	0.10-0.12 0.04-0.06 ---	0.0-2.9 3.0-5.9 ---	1.0-2.0 0.0-1.0 ---	.17 .05 ---
981: Taneum-----	0-14 14-43 43-60	10-20 27-35 5-20	1.15-1.30 1.20-1.40 1.25-1.45	0.6-2 0.2-0.6 0.6-2	0.16-0.18 0.19-0.21 0.11-0.15	0.0-2.9 3.0-5.9 0.0-2.9	2.0-5.0 0.5-2.0 0.3-1.0	.32 .32 .43
1006: Rock outcrop-----	0-60	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Glaciers, icefields--	0-60	0-0	---	---	0.00-0.00	---	---	---
1007: Rock outcrop-----	0-60	---	---	---	---	---	---	---
Andic Humicryods-----	0-2 2-5 5-11 11-24 24-37 37-47	0-25 5-10 5-15 5-15 5-15 ---	0.10-0.30 0.60-0.85 0.60-0.85 0.60-0.85 0.85-1.25 ---	6-100 2-6 0.6-2 0.6-2 0.6-6 ---	0.30-0.60 0.04-0.06 0.05-0.14 0.05-0.14 0.04-0.08 ---	---	60-95 3.0-8.0 10-24 8.0-15 2.0-5.0 ---	--- .05 .17 .15 .05 ---
1441: Teanaway-----	0-3 3-7 7-22 22-42 42-51 51-60	0-25 10-13 10-13 17-30 18-30 25-35	0.10-0.30 1.20-1.40 1.35-1.55 1.55-1.60 1.55-1.70 1.55-1.75	6-100 0.6-2 0.6-2 0.2-0.6 0.2-0.6 0.06-0.2	0.30-0.60 0.18-0.21 0.18-0.21 0.14-0.16 0.14-0.16 0.08-0.10	---	60-95 1.0-3.0 0.5-2.0 0.0-1.0 0.0-1.0 0.0-0.5	--- .37 .43 .37 .43 .24

Table 9.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion	
								Kw	
6710: McDaniel-----	In	Pct	g/cc	In/hr	In/in	Pct	Pct		
	0-11	15-20	1.10-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-4.0	.10	
	11-19	15-20	1.15-1.35	0.6-2	0.09-0.15	0.0-2.9	2.0-3.0	.17	
	19-24	27-35	1.20-1.40	0.2-0.6	0.08-0.13	0.0-2.9	1.0-2.0	.10	
	24-32	27-35	1.20-1.40	0.2-0.6	0.07-0.13	0.0-2.9	1.0-2.0	.10	
DAM: Dam-----	32-60	27-35	1.30-1.40	0.2-0.6	0.05-0.12	0.0-2.9	0.5-2.0	.05	
	---	---	---	---	---	---	---	---	
W: Water-----	---	---	---	---	---	---	---	---	
	---	---	---	---	---	---	---	---	

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
2: Saydab-----	0-1	---	20-30	4.5-5.5	0	0	0	0
	1-3	15-25	---	5.6-6.5	0	0	0	0
	3-10	15-25	---	5.6-6.5	0	0	0	0
	10-17	15-25	---	5.1-6.5	0	0	0	0
	17-27	15-25	---	5.1-6.5	0	0	0	0
	27-36	---	---	---	---	---	---	---
3: Naxing-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	15-25	---	5.1-6.5	0	0	0	0
	6-18	15-25	---	5.1-6.5	0	0	0	0
	18-38	15-25	---	5.1-6.5	0	0	0	0
	38-60	15-30	---	5.1-6.5	0	0	0	0
4: Naxing-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	15-25	---	5.1-6.5	0	0	0	0
	6-18	15-25	---	5.1-6.5	0	0	0	0
	18-38	15-25	---	5.1-6.5	0	0	0	0
	38-60	15-30	---	5.1-6.5	0	0	0	0
6: Ganis-----	0-10	10-20	5.0-10	5.1-5.5	0	0	0	0
	10-19	10-20	5.0-10	5.1-5.5	0	0	0	0
	19-29	---	---	---	---	---	---	---
8: Sapkin-----	0-5	15-25	---	6.1-7.3	0	0	0	0
	5-16	15-25	---	6.1-7.3	0	0	0	0
	16-25	10-20	---	6.1-7.3	0	0	0	0
	25-36	10-20	---	6.1-6.5	0	0	0	0
	36-46	---	---	---	---	---	---	---
9: Naxing-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	15-25	---	5.1-6.5	0	0	0	0
	6-18	15-25	---	5.1-6.5	0	0	0	0
	18-38	15-25	---	5.1-6.5	0	0	0	0
	38-60	15-30	---	5.1-6.5	0	0	0	0
10: Anatone-----	0-3	10-20	---	6.1-7.3	0	0	0	0
	3-10	10-20	---	6.1-7.3	0	0	0	0
	10-14	10-20	---	6.1-7.3	0	0	0	0
	14-24	---	---	---	---	---	---	---
10Y: Bocker-----	0-3	10-20	---	6.1-6.5	0	0	0	0
	3-9	10-20	---	6.1-7.3	0	0	0	0
	9-19	---	---	---	---	---	---	---
11: Sapkin-----	0-5	15-25	---	6.1-7.3	0	0	0	0
	5-16	15-25	---	6.1-7.3	0	0	0	0
	16-25	10-20	---	6.1-7.3	0	0	0	0
	25-36	10-20	---	6.1-6.5	0	0	0	0
	36-46	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
11: Rubble land-----	0-60	---	---	---	---	---	---	---
12: Sapkin-----	0-5	15-25	---	6.1-7.3	0	0	0	0
	5-16	15-25	---	6.1-7.3	0	0	0	0
	16-25	10-20	---	6.1-7.3	0	0	0	0
	25-36	10-20	---	6.1-6.5	0	0	0	0
	36-46	---	---	---	---	---	---	---
13: Jumpe-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-20	---	5.6-6.5	0	0	0	0
	4-12	10-20	---	5.6-6.5	0	0	0	0
	12-28	10-20	---	5.6-6.5	0	0	0	0
	28-60	10-20	---	5.6-6.5	0	0	0	0
14: Jumpe-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-20	---	5.6-6.5	0	0	0	0
	4-12	10-20	---	5.6-6.5	0	0	0	0
	12-28	10-20	---	5.6-6.5	0	0	0	0
	28-60	10-20	---	5.6-6.5	0	0	0	0
15: Stemilt-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-60	6.7-22	---	6.6-7.3	0	0	0	0
16: Stemilt-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-60	6.7-22	---	6.6-7.3	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
18: Loneridge-----	0-4	10-20	---	5.6-7.3	0	0	0	0
	4-19	10-20	---	5.6-7.3	0	0	0	0
	19-46	30-40	---	5.6-7.3	0	0	0	0
	46-60	30-40	---	5.6-7.3	0	0	0	0
19: Darland-----	0-7	10-20	---	6.1-7.3	0	0	0	0
	7-15	10-20	---	6.1-7.3	0	0	0	0
	15-21	10-20	---	6.1-7.3	0	0	0	0
	21-32	10-20	---	6.1-7.3	0	0	0	0
	32-60	10-15	---	6.1-6.5	0	0	0	0
20: Darland, moist-----	0-7	10-20	---	6.1-7.3	0	0	0	0
	7-15	10-20	---	6.1-7.3	0	0	0	0
	15-21	10-20	---	6.1-7.3	0	0	0	0
	21-32	10-20	---	6.1-7.3	0	0	0	0
	32-60	10-15	---	6.1-6.5	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
24: Loneridge, north slopes-----	0-4	10-20	---	5.6-7.3	0	0	0	0
	4-19	10-20	---	5.6-7.3	0	0	0	0
	19-46	30-40	---	5.6-7.3	0	0	0	0
	46-60	30-40	---	5.6-7.3	0	0	0	0
27: Tekison-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-20	---	5.6-7.3	0	0	0	0
	8-15	10-20	---	5.6-6.5	0	0	0	0
	15-60	30-40	---	5.6-6.5	0	0	0	0
28: Odo-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-11	10-20	---	6.1-7.3	0	0	0	0
	11-19	10-20	---	6.1-7.3	0	0	0	0
	19-60	10-20	---	6.1-6.5	0	0	0	0
29: Stemilt, warm-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-60	6.7-22	---	6.6-7.3	0	0	0	0
30: Stemilt-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-60	6.7-22	---	6.6-7.3	0	0	0	0
32: Stemilt-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-60	6.7-22	---	6.6-7.3	0	0	0	0
33: Bocker-----	0-3	10-20	---	6.1-6.5	0	0	0	0
	3-9	10-20	---	6.1-7.3	0	0	0	0
	9-19	---	---	---	---	---	---	---
Jumpe-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-20	---	5.6-6.5	0	0	0	0
	4-12	10-20	---	5.6-6.5	0	0	0	0
	12-28	10-20	---	5.6-6.5	0	0	0	0
	28-60	10-20	---	5.6-6.5	0	0	0	0
34: Bocker-----	0-3	10-20	---	6.1-6.5	0	0	0	0
	3-9	10-20	---	6.1-7.3	0	0	0	0
	9-19	---	---	---	---	---	---	---
Sapkin-----	0-5	15-25	---	6.1-7.3	0	0	0	0
	5-16	15-25	---	6.1-7.3	0	0	0	0
	16-25	10-20	---	6.1-7.3	0	0	0	0
	25-36	10-20	---	6.1-6.5	0	0	0	0
	36-46	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
35:								
Bocker-----	0-3	10-20	---	6.1-6.5	0	0	0	0
	3-9	10-20	---	6.1-7.3	0	0	0	0
	9-19	---	---	---	---	---	---	---
Stemilt-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-60	6.7-22	---	6.6-7.3	0	0	0	0
40:								
Rubble land-----	0-60	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
41:								
Cliffdell-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	6.1-6.5	0	0	0	0
	9-26	10-20	---	5.6-6.5	0	0	0	0
	26-60	10-20	---	5.6-6.5	0	0	0	0
42:								
Cliffdell-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	6.1-6.5	0	0	0	0
	9-26	10-20	---	5.6-6.5	0	0	0	0
	26-60	10-20	---	5.6-6.5	0	0	0	0
48:								
Jumpe, north slopes--	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-20	---	5.6-6.5	0	0	0	0
	4-12	10-20	---	5.6-6.5	0	0	0	0
	12-28	10-20	---	5.6-6.5	0	0	0	0
	28-60	10-20	---	5.6-6.5	0	0	0	0
49:								
Jumpe, south slopes--	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-20	---	5.6-6.5	0	0	0	0
	4-12	10-20	---	5.6-6.5	0	0	0	0
	12-28	10-20	---	5.6-6.5	0	0	0	0
	28-60	10-20	---	5.6-6.5	0	0	0	0
50:								
Jumpe, south slopes--	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-20	---	5.6-6.5	0	0	0	0
	4-12	10-20	---	5.6-6.5	0	0	0	0
	12-28	10-20	---	5.6-6.5	0	0	0	0
	28-60	10-20	---	5.6-6.5	0	0	0	0
51:								
Jumpe-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-20	---	5.6-6.5	0	0	0	0
	4-12	10-20	---	5.6-6.5	0	0	0	0
	12-28	10-20	---	5.6-6.5	0	0	0	0
	28-60	10-20	---	5.6-6.5	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---

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Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
52: Loneridge, north slopes-----	0-4	10-20	---	5.6-7.3	0	0	0	0
	4-19	10-20	---	5.6-7.3	0	0	0	0
	19-46	30-40	---	5.6-7.3	0	0	0	0
	46-60	30-40	---	5.6-7.3	0	0	0	0
53: Loneridge, south slopes-----	0-4	10-20	---	5.6-7.3	0	0	0	0
	4-19	10-20	---	5.6-7.3	0	0	0	0
	19-46	30-40	---	5.6-7.3	0	0	0	0
	46-60	30-40	---	5.6-7.3	0	0	0	0
53M: Tekison-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-20	---	5.6-7.3	0	0	0	0
	8-15	10-20	---	5.6-6.5	0	0	0	0
	15-60	30-40	---	5.6-6.5	0	0	0	0
54: Loneridge, south slopes-----	0-4	10-20	---	5.6-7.3	0	0	0	0
	4-19	10-20	---	5.6-7.3	0	0	0	0
	19-46	30-40	---	5.6-7.3	0	0	0	0
	46-60	30-40	---	5.6-7.3	0	0	0	0
54M: Tekison-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-20	---	5.6-7.3	0	0	0	0
	8-15	10-20	---	5.6-6.5	0	0	0	0
	15-60	30-40	---	5.6-6.5	0	0	0	0
55: Shinn-----	0-2	10-20	---	6.1-7.3	0	0	0	0
	2-6	20-30	---	6.6-7.3	0	0	0	0
	6-9	20-30	---	6.6-7.3	0	0	0	0
	9-18	---	---	---	---	---	---	---
56: Shinn-----	0-2	10-20	---	6.1-7.3	0	0	0	0
	2-6	20-30	---	6.6-7.3	0	0	0	0
	6-9	20-30	---	6.6-7.3	0	0	0	0
	9-18	---	---	---	---	---	---	---
Nint-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-13	20-30	---	6.6-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-38	20-30	---	6.6-7.3	0	0	0	0
	38-48	---	---	---	---	---	---	---
Shushuskin-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-8	15-25	---	6.1-7.3	0	0	0	0
	8-13	15-25	---	6.1-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-23	20-30	---	6.6-7.3	0	0	0	0
	23-32	20-30	---	6.6-7.3	0	0	0	0
	32-42	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
57: Nard, sandstone substratum-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	6.1-6.5	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-43	15-25	---	5.1-7.3	0	0	0	0
	43-47	---	---	---	---	---	---	---
62: Pachneum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.1-7.3	0	0	0	0
	18-26	20-30	---	6.6-7.3	0	0	0	0
	26-33	20-30	---	6.6-7.3	0	0	0	0
	33-47	20-30	---	6.6-7.3	0	0	0	0
	47-60	20-30	---	6.6-7.3	0	0	0	0
64: Meystre-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	6.1-6.5	0	0	0	0
	4-12	10-20	---	6.1-6.5	0	0	0	0
	12-42	15-25	---	6.1-6.5	0	0	0	0
	42-60	10-25	---	6.1-7.3	0	0	0	0
65: Meystre-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	6.1-6.5	0	0	0	0
	4-12	10-20	---	6.1-6.5	0	0	0	0
	12-42	15-25	---	6.1-6.5	0	0	0	0
	42-60	10-25	---	6.1-7.3	0	0	0	0
66: Jumpmore, south slopes, stony surface-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	5.1-6.0	0	0	0	0
	5-14	10-20	---	5.1-6.0	---	0	0	0
	14-30	10-20	---	5.1-6.0	0	0	0	0
	30-60	10-20	---	5.1-6.0	0	0	0	0
67: Jumpmore, north slopes-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	5.1-6.0	0	0	0	0
	5-14	10-20	---	5.1-6.0	---	0	0	0
	14-30	10-20	---	5.1-6.0	0	0	0	0
	30-60	10-20	---	5.1-6.0	0	0	0	0
69: Stirrup-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	15-20	5.0-10	4.5-5.5	0	0	0	0
	4-8	40-65	15-25	4.5-5.5	0	0	0	0
	8-24	25-35	10-15	4.5-5.5	0	0	0	0
	24-36	10-20	5.0-10	4.5-5.5	0	0	0	0
	36-43	5.0-15	2.0-5.0	4.5-5.5	0	0	0	0
	43-53	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
70: McDaniel-----	0-11	15-25	---	6.6-7.3	0	0	0	0
	11-19	15-25	---	6.6-7.3	0	0	0	0
	19-24	15-25	---	6.6-7.3	0	0	0	0
	24-32	15-25	---	6.6-7.3	0	0	0	0
	32-60	15-25	---	6.6-7.3	0	0	0	0
71: Kiper-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.6-6.0	0	0	0	0
	4-8	10-15	---	5.6-6.0	0	0	0	0
	8-35	5.0-15	---	5.6-6.0	0	0	0	0
	35-60	5.0-10	---	5.6-6.0	0	0	0	0
75: Yahne-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	0.0-0.0	---	6.1-6.5	0	0	0	0
	9-17	0.0-0.0	---	5.6-6.0	0	0	0	0
	17-60	0.0-0.0	---	5.6-6.0	0	0	0	0
76: Yahne-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	0.0-0.0	---	6.1-6.5	0	0	0	0
	9-17	0.0-0.0	---	5.6-6.0	0	0	0	0
	17-60	0.0-0.0	---	5.6-6.0	0	0	0	0
77: Ainsley-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-2	10-20	---	5.6-6.0	0	0	0	0
	2-7	10-20	---	5.6-6.0	0	0	0	0
	7-22	10-20	---	5.6-6.0	0	0	0	0
	22-34	20-30	---	5.6-6.5	0	0	0	0
	34-60	20-35	---	5.6-6.5	0	0	0	0
78: Ainsley-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-2	10-20	---	5.6-6.0	0	0	0	0
	2-7	10-20	---	5.6-6.0	0	0	0	0
	7-22	10-20	---	5.6-6.0	0	0	0	0
	22-34	20-30	---	5.6-6.5	0	0	0	0
	34-60	20-35	---	5.6-6.5	0	0	0	0
80: Cliffdell-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	6.1-6.5	0	0	0	0
	9-26	10-20	---	5.6-6.5	0	0	0	0
	26-60	10-20	---	5.6-6.5	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
81: Terence-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-6	10-15	---	5.1-6.0	0	0	0	0
	6-14	10-20	---	5.1-6.0	0	0	0	0
	14-29	10-20	---	5.1-6.0	0	0	0	0
	29-60	10-20	---	5.1-6.0	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
83: Terence-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-6	10-15	---	5.1-6.0	0	0	0	0
	6-14	10-20	---	5.1-6.0	0	0	0	0
	14-29	10-20	---	5.1-6.0	0	0	0	0
	29-60	10-20	---	5.1-6.0	0	0	0	0
85: Spexarth-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	5.1-6.0	0	0	0	0
	5-19	10-20	---	5.1-6.0	0	0	0	0
	19-28	5.0-20	2.0-10	5.1-5.5	0	0	0	0
	28-38	---	---	---	---	---	---	---
86: Osborn, south slopes	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	5.6-6.5	0	0	0	0
	9-16	10-15	---	5.6-6.5	0	0	0	0
	16-33	5.0-10	---	5.6-6.5	0	0	0	0
	33-42	---	---	---	---	---	---	---
87: Osborn, north slopes	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	5.6-6.5	0	0	0	0
	9-16	10-15	---	5.6-6.5	0	0	0	0
	16-33	5.0-10	---	5.6-6.5	0	0	0	0
	33-42	---	---	---	---	---	---	---
89: Cryaquepts-----	0-7	10-20	---	6.1-7.3	0	0	0	0
	7-27	10-20	---	6.1-7.3	0	0	0	0
	27-60	10-20	---	6.1-7.3	0	---	0	0
90: Bertolotti, south slopes-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	5.0-10	---	6.1-6.5	0	0	0	0
	3-11	5.0-10	---	6.1-6.5	0	0	0	0
	11-17	10-20	---	5.1-6.0	0	0	0	0
	17-27	10-20	---	5.1-6.0	0	0	0	0
	27-60	10-20	---	5.1-6.0	0	0	0	0
91: Bertolotti, north slopes-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	5.0-10	---	6.1-6.5	0	0	0	0
	3-11	5.0-10	---	6.1-6.5	0	0	0	0
	11-17	10-20	---	5.1-6.0	0	0	0	0
	17-27	10-20	---	5.1-6.0	0	0	0	0
	27-60	10-20	---	5.1-6.0	0	0	0	0
92: Rock outcrop-----	0-60	---	---	---	---	---	---	---
Bertolotti-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	5.0-10	---	6.1-6.5	0	0	0	0
	3-11	5.0-10	---	6.1-6.5	0	0	0	0
	11-17	10-20	---	5.1-6.0	0	0	0	0
	17-27	10-20	---	5.1-6.0	0	0	0	0
	27-60	10-20	---	5.1-6.0	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
93: Bertolotti-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	5.0-10	---	6.1-6.5	0	0	0	0
	3-11	5.0-10	---	6.1-6.5	0	0	0	0
	11-17	10-20	---	5.1-6.0	0	0	0	0
	17-27	10-20	---	5.1-6.0	0	0	0	0
	27-60	10-20	---	5.1-6.0	0	0	0	0
96: Terence-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-6	10-15	---	5.1-6.0	0	0	0	0
	6-14	10-20	---	5.1-6.0	0	0	0	0
	14-29	10-20	---	5.1-6.0	0	0	0	0
	29-60	10-20	---	5.1-6.0	0	0	0	0
97: Stilgar-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-20	---	5.6-6.0	0	0	0	0
	9-18	10-20	---	5.1-6.0	0	0	0	0
	18-38	10-20	---	5.1-6.0	0	0	0	0
	38-60	10-20	---	5.1-6.0	0	0	0	0
101: Standup-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	6.1-6.5	0	0	0	0
	5-26	10-15	---	5.6-6.5	0	0	0	0
	26-60	5.0-15	---	5.6-6.5	0	0	0	0
102: Standup, north slopes	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	6.1-6.5	0	0	0	0
	5-26	10-15	---	5.6-6.5	0	0	0	0
	26-60	5.0-15	---	5.6-6.5	0	0	0	0
104: Currier-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-15	---	5.6-6.0	0	0	0	0
	3-9	10-20	---	5.6-6.0	0	0	0	0
	9-36	10-20	---	5.6-6.0	0	0	0	0
	36-60	10-20	---	5.1-6.0	0	0	0	0
105: Currier-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-15	---	5.6-6.0	0	0	0	0
	3-9	10-20	---	5.6-6.0	0	0	0	0
	9-36	10-20	---	5.6-6.0	0	0	0	0
	36-60	10-20	---	5.1-6.0	0	0	0	0
106: Currier-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-15	---	5.6-6.0	0	0	0	0
	3-9	10-20	---	5.6-6.0	0	0	0	0
	9-36	10-20	---	5.6-6.0	0	0	0	0
	36-60	10-20	---	5.1-6.0	0	0	0	0
108: Jimek-----	0-6	10-15	---	5.6-6.0	0	0	0	0
	6-10	10-20	---	5.6-6.0	0	0	0	0
	10-25	10-20	---	5.1-6.0	0	0	0	0
	25-38	5.0-15	2.0-5.0	5.1-5.5	0	0	0	0
	38-48	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
112: Natkim-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-40	10-15	---	5.6-6.5	0	0	0	0
	40-60	5.0-15	---	5.6-6.5	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
115: Jimek-----	0-6	10-15	---	5.6-6.0	0	0	0	0
	6-10	10-20	---	5.6-6.0	0	0	0	0
	10-25	10-20	---	5.1-6.0	0	0	0	0
	25-38	5.0-15	2.0-5.0	5.1-5.5	0	0	0	0
	38-48	---	---	---	---	---	---	---
123: Kaner-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	45-70	5.1-5.5	0	0	0	0
	4-12	10-15	45-70	5.1-5.5	0	0	0	0
	12-23	10-20	5.0-10	5.1-5.5	0	0	0	0
	23-36	10-20	25-50	5.1-5.5	0	0	0	0
	36-60	10-20	25-50	5.1-5.5	0	0	0	0
125: Bearrun-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-7	10-20	---	5.6-6.5	0	0	0	0
	7-23	10-15	---	5.6-6.5	0	0	0	0
	23-45	25-35	---	5.6-6.5	0	0	0	0
	45-60	25-30	---	5.6-6.5	0	0	0	0
128: Kafing, north slopes	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	10-15	---	5.6-6.5	0	0	0	0
	6-13	10-20	---	5.6-6.5	0	0	0	0
	13-24	20-30	---	5.6-6.0	0	0	0	0
	24-60	20-30	---	5.6-6.0	0	0	0	0
129: Kafing, south slopes	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	10-15	---	5.6-6.5	0	0	0	0
	6-13	10-20	---	5.6-6.5	0	0	0	0
	13-24	20-30	---	5.6-6.0	0	0	0	0
	24-60	20-30	---	5.6-6.0	0	0	0	0
130: Brisky-----	0-4	5.0-15	---	6.1-7.3	0	0	0	0
	4-9	5.0-15	---	6.1-7.3	0	0	0	0
	9-18	5.0-10	---	6.1-7.3	0	0	0	0
	18-22	---	---	---	---	---	---	---
131: Kladnick, warm-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.6-6.5	0	0	0	0
	4-15	10-15	---	5.6-6.5	0	0	0	0
	15-24	5.0-10	---	5.6-6.5	0	0	0	0
	24-60	5.0-10	---	5.6-6.5	0	0	0	0
137: Dumps, mine-----	---	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
138: Pits, mine-----	---	---	---	---	---	---	---	---
139: Nard-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
141: Nard-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
142: Scotties-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-11	10-15	---	6.1-7.3	0	0	0	0
	11-19	10-15	---	6.1-7.3	0	0	0	0
	19-31	5.0-10	---	5.6-6.5	0	0	0	0
	31-45	5.0-10	---	5.6-6.5	0	0	0	0
	45-49	---	---	---	---	---	---	---
144: Nard-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
146: Nard-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
158: Kiper-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.6-6.0	0	0	0	0
	4-8	10-15	---	5.6-6.0	0	0	0	0
	8-35	5.0-15	---	5.6-6.0	0	0	0	0
	35-60	5.0-10	---	5.6-6.0	0	0	0	0
159: Ampad, south slopes--	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	6.1-6.5	0	0	0	0
	5-10	10-15	---	5.6-6.0	0	0	0	0
	10-29	5.0-10	---	5.6-6.0	0	0	0	0
	29-33	5.0-10	---	5.6-6.0	0	0	0	0
	33-43	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
160: Cumulic Haploxerolls	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-20	---	6.1-7.3	0	0	0	0
	8-53	15-25	---	5.6-6.5	0	0	0	0
	53-60	15-25	---	5.6-6.5	0	0	0	0
161: Rock outcrop-----	0-60	---	---	---	---	---	---	---
162: Hakker-----	0-25	25-30	---	6.1-6.5	0	0	0	0
	25-44	30-40	---	6.1-6.5	0	0	0	0
	44-54	---	---	---	---	---	---	---
163: Nard, north slopes---	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
164: Nard-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
166: Ampad, warm-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	6.1-6.5	0	0	0	0
	5-10	10-15	---	5.6-6.0	0	0	0	0
	10-29	5.0-10	---	5.6-6.0	0	0	0	0
	29-33	5.0-10	---	5.6-6.0	0	0	0	0
	33-43	---	---	---	---	---	---	---
167: Keechelus, south slopes-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-9	10-20	---	6.1-6.5	0	0	0	0
	9-22	25-30	---	5.6-6.5	0	0	0	0
	22-35	25-40	---	5.6-6.5	0	0	0	0
	35-60	25-40	---	5.6-6.5	0	0	0	0
Nard-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
Kafing, south slopes	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	10-15	---	5.6-6.5	0	0	0	0
	6-13	10-20	---	5.6-6.5	0	0	0	0
	13-24	20-30	---	5.6-6.0	0	0	0	0
	24-60	20-30	---	5.6-6.0	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
168: Keechelus, north slopes-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-9	10-20	---	6.1-6.5	0	0	0	0
	9-22	25-30	---	5.6-6.5	0	0	0	0
	22-35	25-40	---	5.6-6.5	0	0	0	0
	35-60	25-40	---	5.6-6.5	0	0	0	0
Nard-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.6-7.3	0	0	0	0
	4-12	10-20	---	5.6-7.3	0	0	0	0
	12-24	10-20	---	5.6-7.3	0	0	0	0
	24-34	15-25	---	5.1-7.3	0	0	0	0
	34-60	15-25	---	5.1-7.3	0	0	0	0
Kafing, north slopes	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	10-15	---	5.6-6.5	0	0	0	0
	6-13	10-20	---	5.6-6.5	0	0	0	0
	13-24	20-30	---	5.6-6.0	0	0	0	0
	24-60	20-30	---	5.6-6.0	0	0	0	0
170: Ampad-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	6.1-6.5	0	0	0	0
	5-10	10-15	---	5.6-6.0	0	0	0	0
	10-29	5.0-10	---	5.6-6.0	0	0	0	0
	29-33	5.0-10	---	5.6-6.0	0	0	0	0
	33-43	---	---	---	---	---	---	---
175: Keechelus-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-9	10-20	---	6.1-6.5	0	0	0	0
	9-22	25-30	---	5.6-6.5	0	0	0	0
	22-35	25-40	---	5.6-6.5	0	0	0	0
	35-60	25-40	---	5.6-6.5	0	0	0	0
176: Keechelus, south slopes-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-9	10-20	---	6.1-6.5	0	0	0	0
	9-22	25-30	---	5.6-6.5	0	0	0	0
	22-35	25-40	---	5.6-6.5	0	0	0	0
	35-60	25-40	---	5.6-6.5	0	0	0	0
177: Keechelus, north slopes-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-9	10-20	---	6.1-6.5	0	0	0	0
	9-22	25-30	---	5.6-6.5	0	0	0	0
	22-35	25-40	---	5.6-6.5	0	0	0	0
	35-60	25-40	---	5.6-6.5	0	0	0	0
180: Nimue-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-15	4.0-6.0	4.5-5.0	0	0	0	0
	4-7	40-65	15-25	4.5-5.9	0	0	0	0
	7-12	40-60	15-20	4.5-5.9	0	0	0	0
	12-26	10-25	---	5.1-6.5	0	0	0	0
	26-60	10-15	---	5.1-6.5	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
181: Nimue-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-15	4.0-6.0	4.5-5.0	0	0	0	0
	4-7	40-65	15-25	4.5-5.9	0	0	0	0
	7-12	40-60	15-20	4.5-5.9	0	0	0	0
	12-26	10-25	---	5.1-6.5	0	0	0	0
	26-60	10-15	---	5.1-6.5	0	0	0	0
182: Haywire-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-15	4.0-6.0	4.5-5.0	0	0	0	0
	3-10	40-65	15-25	4.5-5.5	0	0	0	0
	10-18	25-35	10-15	4.5-5.5	0	0	0	0
	18-26	15-25	5.0-10	4.5-5.5	0	0	0	0
	26-38	10-15	---	5.1-6.0	0	0	0	0
	38-48	---	---	---	---	---	---	---
183: Haywire-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-15	4.0-6.0	4.5-5.0	0	0	0	0
	3-10	40-65	15-25	4.5-5.5	0	0	0	0
	10-18	25-35	10-15	4.5-5.5	0	0	0	0
	18-26	15-25	5.0-10	4.5-5.5	0	0	0	0
	26-38	10-15	---	5.1-6.0	0	0	0	0
	38-48	---	---	---	---	---	---	---
185: Andic Dystrocryepts--	0-5	15-30	5.0-10	5.1-5.5	0	0	0	0
	5-11	15-25	5.0-10	5.1-5.5	0	0	0	0
	11-26	10-20	5.0-10	5.1-5.5	0	0	0	0
	26-36	---	---	---	---	---	---	---
186: Stirrup-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	15-20	5.0-10	4.5-5.5	0	0	0	0
	4-8	40-65	15-25	4.5-5.5	0	0	0	0
	8-24	25-35	10-15	4.5-5.5	0	0	0	0
	24-36	10-20	5.0-10	4.5-5.5	0	0	0	0
	36-43	5.0-15	2.0-5.0	4.5-5.5	0	0	0	0
	43-53	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
187: Chinkmin-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-2	---	20-30	4.5-5.5	0	---	0	0
	2-5	10-15	4.0-6.0	4.5-5.0	0	0	0	0
	5-11	30-65	10-25	4.5-5.5	0	0	0	0
	11-16	25-35	10-15	4.5-5.5	0	0	0	0
	16-23	15-25	5.0-10	4.5-5.5	0	0	0	0
	23-33	10-15	---	5.1-6.0	0	0	0	0
	33-41	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
188: Chinkmin-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-2	---	20-30	4.5-5.5	0	---	0	0
	2-5	10-15	4.0-6.0	4.5-5.0	0	0	0	0
	5-11	30-65	10-25	4.5-5.5	0	0	0	0
	11-16	25-35	10-15	4.5-5.5	0	0	0	0
	16-23	15-25	5.0-10	4.5-5.5	0	0	0	0
	23-33	10-15	---	5.1-6.0	0	0	0	0
	33-41	---	---	---	---	---	---	---
190: Nimue-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	10-15	4.0-6.0	4.5-5.0	0	0	0	0
	4-7	40-65	15-25	4.5-5.9	0	0	0	0
	7-12	40-60	15-25	4.5-5.9	0	0	0	0
	12-26	10-25	---	5.1-6.5	0	0	0	0
	26-60	10-15	---	5.1-6.5	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
191: Sutkin-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-11	10-20	---	6.1-7.3	0	0	0	0
	11-39	10-20	---	6.1-7.3	0	0	0	0
	39-60	10-20	---	6.1-7.3	0	0	0	0
194: Osborn-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	5.6-6.5	0	0	0	0
	9-16	10-15	---	5.6-6.5	0	0	0	0
	16-33	5.0-10	---	5.6-6.5	0	0	0	0
	33-42	---	---	---	---	---	---	---
Scotties-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-11	10-15	---	6.1-7.3	0	0	0	0
	11-19	10-15	---	6.1-7.3	0	0	0	0
	19-31	5.0-10	---	5.6-6.5	0	0	0	0
	31-45	5.0-10	---	5.6-6.5	0	0	0	0
	45-49	---	---	---	---	---	---	---
Chapot-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-7	10-20	---	6.1-6.8	0	0	0	0
	7-15	10-20	---	6.1-6.8	0	0	0	0
	15-25	10-20	---	6.1-6.8	0	0	0	0
	25-60	15-25	---	6.1-6.8	0	0	0	0
195: Scotties-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-11	10-15	---	6.1-7.3	0	0	0	0
	11-19	10-15	---	6.1-7.3	0	0	0	0
	19-31	5.0-10	---	5.6-6.5	0	0	0	0
	31-45	5.0-10	---	5.6-6.5	0	0	0	0
	45-49	---	---	---	---	---	---	---
Chapot-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-7	10-20	---	6.1-6.8	0	0	0	0
	7-15	10-20	---	6.1-6.8	0	0	0	0
	15-25	10-20	---	6.1-6.8	0	0	0	0
	25-60	15-25	---	6.1-6.8	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
201: Roslyn-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-15	10-15	---	6.1-6.5	0	0	0	0
	15-37	10-20	---	5.6-6.5	0	0	0	0
	37-49	10-20	---	5.6-6.5	0	0	0	0
	49-60	5.0-15	---	5.6-6.5	0	0	0	0
203: Teanaway-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-7	10-20	---	5.6-7.3	0	0	0	0
	7-22	10-20	---	5.6-6.5	0	0	0	0
	22-42	10-20	---	5.6-6.5	0	0	0	0
	42-51	10-20	---	5.6-6.5	0	0	0	0
	51-60	15-25	---	6.1-7.3	0	0	0	0
204: Teanaway-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-7	10-20	---	5.6-7.3	0	0	0	0
	7-22	10-20	---	5.6-6.5	0	0	0	0
	22-42	10-20	---	5.6-6.5	0	0	0	0
	42-51	10-20	---	5.6-6.5	0	0	0	0
	51-60	15-25	---	6.1-7.3	0	0	0	0
205: Xerofluvents-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-20	10-15	---	5.6-6.5	0	0	0	0
	20-23	5.0-10	---	5.6-6.5	0	0	0	0
	23-60	1.0-5.0	---	5.6-6.5	0	0	0	0
206: Dystroxerepts, south slopes-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-7	10-15	---	5.6-6.5	0	0	0	0
	7-18	10-20	---	5.6-6.5	0	0	0	0
	18-60	5.0-20	---	5.6-6.5	0	0	0	0
207: Quicksell-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-20	10-20	---	6.1-6.5	0	0	0	0
	20-43	30-40	---	6.1-7.3	0	0	0	0
	43-60	30-40	---	6.6-7.3	0	0	0	0
208: Patnish-----	0-7	15-25	---	6.1-7.3	0	0	0	0
	7-14	15-25	---	6.1-7.3	0	0	0	0
	14-27	15-25	---	6.1-7.3	0	0	0	0
	27-35	10-15	---	6.1-7.3	0	0	0	0
	35-60	5.0-10	---	6.1-7.3	0	0	0	0
Mippon-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-12	10-15	---	6.1-7.3	0	0	0	0
	12-18	5.0-15	---	6.1-7.3	0	0	0	0
	18-60	5.0-10	---	6.1-7.3	0	0	0	0
Myzel-----	0-6	20-30	---	6.1-7.3	0	0	0	0
	6-22	20-30	---	6.1-7.3	0	0	0	0
	22-38	20-30	---	6.1-7.3	0	0	0	0
	38-57	20-30	---	6.1-7.3	0	0	0	0
	57-60	20-30	---	6.1-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
210: Dystroxerepts-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-7	10-15	---	5.6-6.5	0	0	0	0
	7-18	10-20	---	5.6-6.5	0	0	0	0
	18-60	5.0-20	---	5.6-6.5	0	0	0	0
211: Teanaway-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-7	10-20	---	5.6-7.3	0	0	0	0
	7-22	10-20	---	5.6-6.5	0	0	0	0
	22-42	10-20	---	5.6-6.5	0	0	0	0
	42-51	10-20	---	5.6-6.5	0	0	0	0
	51-60	15-25	---	6.1-7.3	0	0	0	0
213: Roslyn, moist-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-15	10-15	---	6.1-6.5	0	0	0	0
	15-37	10-20	---	5.6-6.5	0	0	0	0
	37-60	10-20	---	5.6-6.5	0	0	0	0
214: Haplosaprists-----	0-8	50-110	---	3.6-7.3	0	0	0	0
	8-20	50-110	---	3.6-7.3	0	0	0	0
	20-43	50-110	---	3.6-7.3	0	0	0	0
	43-60	10-30	---	5.6-7.3	0	0	0	0
216: Roxer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-60	5.0-15	---	5.6-6.5	0	0	0	0
217: Roxer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-60	5.0-15	---	5.6-6.5	0	0	0	0
218: Bograp-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-12	10-15	---	6.1-7.3	0	0	0	0
	12-19	5.0-15	---	6.1-6.5	0	0	0	0
	19-28	10-20	---	6.1-6.5	0	0	0	0
	28-64	20-30	---	5.6-6.5	0	0	0	0
220: Roxer, basalt substratum-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-51	---	---	---	---	---	---	---
Roxer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-60	5.0-15	---	5.6-6.5	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
222: Ampad, north slopes--	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	6.1-6.5	0	0	0	0
	5-10	10-15	---	5.6-6.0	0	0	0	0
	10-29	5.0-10	---	5.6-6.0	0	0	0	0
	29-33	5.0-10	---	5.6-6.0	0	0	0	0
	33-43	---	---	---	---	---	---	---
226: Bograp-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-12	10-15	---	6.1-7.3	0	0	0	0
	12-19	5.0-15	---	6.1-6.5	0	0	0	0
	19-28	10-20	---	6.1-6.5	0	0	0	0
	28-64	20-30	---	5.6-6.5	0	0	0	0
227: Jummer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-20	---	5.1-6.0	0	0	0	0
	4-7	10-20	---	5.1-6.0	0	0	0	0
	7-21	10-20	---	5.1-6.0	0	0	0	0
	21-34	10-20	---	5.1-6.0	0	0	0	0
	34-44	---	---	---	---	---	---	---
Jumpmore-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	5.1-6.0	0	0	0	0
	5-14	10-20	---	5.1-6.0	---	0	0	0
	14-30	10-20	---	5.1-6.0	0	0	0	0
	30-60	10-20	---	5.1-6.0	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
228: Natkim-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-40	10-15	---	5.6-6.5	0	0	0	0
	40-60	5.0-15	---	5.6-6.5	0	0	0	0
229: Natkim-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-40	10-15	---	5.6-6.5	0	0	0	0
	40-60	5.0-15	---	5.6-6.5	0	0	0	0
230: Rock outcrop-----	0-60	---	---	---	---	---	---	---
Roxer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-60	5.0-15	---	5.6-6.5	0	0	0	0
232: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	4.0-6.0	5.1-5.5	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
233: Natkim-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-40	10-15	---	5.6-6.5	0	0	0	0
	40-60	5.0-15	---	5.6-6.5	0	0	0	0
234: Kladnick-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	5.6-6.5	0	0	0	0
	9-15	10-15	---	5.6-6.5	0	0	0	0
	15-24	5.0-10	---	5.6-6.5	0	0	0	0
	24-60	5.0-10	---	5.6-6.5	0	0	0	0
237: Kladnick-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	5.6-6.5	0	0	0	0
	9-15	10-15	---	5.6-6.5	0	0	0	0
	15-24	5.0-10	---	5.6-6.5	0	0	0	0
	24-60	5.0-10	---	5.6-6.5	0	0	0	0
238: Racker-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	6.1-6.5	0	0	0	0
	5-12	10-15	---	6.1-6.5	0	0	0	0
	12-31	1.0-5.0	---	6.1-6.5	0	0	0	0
	31-60	1.0-5.0	---	6.1-6.5	0	---	0	0
241: Thetis-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	10-15	---	5.1-6.0	0	0	0	0
	6-12	25-35	---	5.1-5.9	0	0	0	0
	12-48	10-20	---	5.1-6.0	0	0	0	0
	48-60	5.0-15	---	5.1-6.0	0	0	0	0
242: Roxer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-60	5.0-15	---	5.6-6.5	0	0	0	0
251: Domerie, stony surface-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	10-15	---	5.1-6.0	0	0	0	0
	9-34	10-15	---	5.1-6.0	0	0	0	0
	34-41	5.0-15	---	5.1-6.0	0	0	0	0
	41-56	5.0-15	---	5.1-6.0	0	0	0	0
	56-60	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
252: Domerie, south slopes, stony surface-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	10-15	---	5.1-6.0	0	0	0	0
	9-34	10-15	---	5.1-6.0	0	0	0	0
	34-41	5.0-15	---	5.1-6.0	0	0	0	0
	41-56	5.0-15	---	5.1-6.0	0	0	0	0
	56-60	---	---	---	---	---	---	---
253: Domerie, north slopes, stony surface-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	10-15	---	5.1-6.0	0	0	0	0
	9-34	10-15	---	5.1-6.0	0	0	0	0
	34-41	5.0-15	---	5.1-6.0	0	0	0	0
	41-56	5.0-15	---	5.1-6.0	0	0	0	0
	56-60	---	---	---	---	---	---	---
254: Kachess-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-10	25-35	10-15	4.5-6.0	0	0	0	0
	10-30	10-20	---	5.1-6.5	0	0	0	0
	30-60	5.0-10	---	5.1-6.0	0	0	0	0
255: Thetis-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-6	10-15	---	5.1-6.0	0	0	0	0
	6-12	25-35	---	5.1-5.9	0	0	0	0
	12-48	10-20	---	5.1-6.0	0	0	0	0
	48-60	5.0-15	---	5.1-6.0	0	0	0	0
259: Fluvaquents-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-20	---	5.1-6.0	0	0	0	0
	9-18	10-15	---	5.1-6.0	0	0	0	0
	18-60	5.0-10	---	5.1-6.0	0	0	0	0
262: Roslyn, clay loam subsoil-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-15	10-15	---	6.1-6.5	0	0	0	0
	15-31	10-20	---	5.6-6.5	0	0	0	0
	31-60	15-25	---	5.6-6.0	0	0	0	0
263: Volperie-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-16	10-15	---	5.6-6.5	0	0	0	0
	16-38	5.0-15	---	5.6-6.5	0	0	0	0
	38-48	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
264: Volperie-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-16	10-15	---	5.6-6.5	0	0	0	0
	16-38	5.0-15	---	5.6-6.5	0	0	0	0
	38-48	---	---	---	---	---	---	---
265: Volperie, warm-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-16	10-15	---	5.6-6.5	0	0	0	0
	16-38	5.0-15	---	5.6-6.5	0	0	0	0
	38-48	---	---	---	---	---	---	---
266: Volperie, north slopes-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	5.6-6.5	0	0	0	0
	8-16	10-15	---	5.6-6.5	0	0	0	0
	16-38	5.0-15	---	5.6-6.5	0	0	0	0
	38-48	---	---	---	---	---	---	---
267: Esmeralda, moist-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-20	---	5.1-6.0	0	0	0	0
	3-10	15-30	---	5.1-6.0	0	0	0	0
	10-44	10-15	---	5.1-6.0	0	0	0	0
	44-60	5.0-15	---	5.1-6.0	0	0	0	0
268: Vitricryands-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	15-30	---	5.1-6.0	0	0	0	0
	9-37	10-25	---	5.1-6.0	0	0	0	0
	37-47	---	---	---	---	---	---	---
270: Roxer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-60	5.0-15	---	5.6-6.5	0	0	0	0
Deroux-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-9	10-15	---	6.1-6.5	0	0	0	0
	9-12	5.0-15	---	5.1-6.0	0	0	0	0
	12-25	5.0-15	---	5.6-6.0	0	0	0	0
	25-35	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
271: Roxer-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	---	6.1-6.5	0	0	0	0
	8-33	10-15	---	5.6-6.5	0	0	0	0
	33-44	5.0-15	---	5.6-6.5	0	0	0	0
	44-60	5.0-15	---	5.6-6.5	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
271: Deroux-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-9	10-15	---	6.1-6.5	0	0	0	0
	9-12	5.0-15	---	5.1-6.0	0	0	0	0
	12-25	5.0-15	---	5.6-6.0	0	0	0	0
	25-35	---	---	---	---	---	---	---
272: Andic Dystroxerepts--	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-14	10-15	---	5.6-7.3	0	0	0	0
	14-17	5.0-15	---	5.6-6.5	0	0	0	0
	17-33	5.0-15	---	5.6-6.5	0	0	0	0
	33-43	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
280: Esmeralda-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-20	---	5.1-6.0	0	0	0	0
	3-10	15-30	---	5.1-6.0	0	0	0	0
	10-44	10-15	---	5.1-6.0	0	0	0	0
	44-60	5.0-15	---	5.1-6.0	0	0	0	0
281: Vanepps-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-9	10-15	---	6.1-6.5	0	0	0	0
	9-29	10-15	---	6.1-6.5	0	0	0	0
	29-38	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
284: Esmeralda, bouldery surface-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-20	---	5.1-6.0	0	0	0	0
	3-10	15-30	---	5.1-6.0	0	0	0	0
	10-44	10-15	---	5.1-6.0	0	0	0	0
	44-60	5.0-15	---	5.1-6.0	0	0	0	0
290: Andic Dystrocryepts--	0-5	10-15	---	5.6-6.0	0	0	0	0
	5-11	15-25	5.0-10	5.1-5.5	0	0	0	0
	11-26	10-20	5.0-10	5.1-5.5	0	0	0	0
	26-36	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
301: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	10-15	3.5-6.0	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
302: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	10-15	3.5-6.0	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
304: Madrak-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-10	10-15	---	5.6-6.0	0	0	0	0
	10-19	5.0-15	---	5.6-6.0	0	0	0	0
	19-30	5.0-10	---	5.6-6.0	0	0	0	0
	30-39	---	---	---	---	---	---	---
306: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	45-70	3.5-6.0	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
308: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	45-70	3.5-6.0	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
309: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	10-15	3.5-6.0	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
313: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	45-70	3.5-6.0	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
315: Lemah-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	15-30	---	5.6-6.5	0	0	0	0
	3-9	15-30	---	5.6-6.0	0	0	0	0
	9-37	10-15	---	5.6-6.0	0	0	0	0
	37-60	5.0-10	---	5.6-6.0	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
316: Cryorthents-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-15	---	5.6-6.5	0	0	0	0
	5-21	10-15	---	5.6-6.5	0	0	0	0
	21-27	5.0-15	---	6.1-7.3	0	0	0	0
	27-60	5.0-10	---	6.1-7.3	0	0	0	0
317: Ronsel-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	25-35	---	5.1-5.9	0	0	0	0
	9-18	10-15	---	5.1-6.0	0	0	0	0
	18-60	5.0-15	---	5.6-6.5	0	0	0	0
318: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	4.0-6.0	5.1-5.5	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
319: Vabus, south slopes--	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	4.0-6.0	5.1-5.5	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
320: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	4.0-6.0	5.1-5.5	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
321: Andic Dystrocryepts, avalanche chute-----	0-5	15-30	5.0-10	5.1-5.5	0	0	0	0
	5-11	15-25	5.0-10	5.1-5.5	0	0	0	0
	11-60	10-20	5.0-10	5.1-5.5	0	0	0	0
Andic Haplocryods----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-4	5.0-15	---	5.1-6.0	0	0	0	0
	4-14	15-30	---	5.1-5.9	0	0	0	0
	14-24	10-15	---	5.1-6.0	0	0	0	0
	24-60	5.0-15	---	5.1-6.0	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
322: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	4.0-6.0	5.1-5.5	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
323: Cryorthents, cool----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-8	10-15	5.0-10	4.5-5.5	0	0	0	0
	8-17	5.0-15	---	5.1-6.0	0	0	0	0
	17-60	5.0-10	---	5.1-6.0	0	0	0	0
324: Ronsel-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	25-35	---	5.1-5.9	0	0	0	0
	9-18	10-15	---	5.1-6.0	0	0	0	0
	18-60	5.0-15	---	5.6-6.5	0	0	0	0
328: Cryofluvents-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-7	10-15	---	5.1-7.3	0	0	0	0
	7-13	10-15	---	5.1-7.3	0	0	0	0
	13-60	5.0-10	---	5.1-7.3	0	0	0	0
Dystrocryepts-----	0-2	---	20-30	4.5-5.5	0	0	0	0
	2-12	10-15	---	5.1-6.0	0	0	0	0
	12-29	5.0-15	---	5.1-6.0	0	0	0	0
	29-60	5.0-10	---	5.1-6.0	0	0	0	0
332: Stirrup-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	15-20	5.0-10	4.5-5.5	0	0	0	0
	4-8	40-65	15-25	4.5-5.5	0	0	0	0
	8-24	25-35	10-15	4.5-5.5	0	0	0	0
	24-36	10-20	5.0-10	4.5-5.5	0	0	0	0
	36-43	5.0-15	2.0-5.0	4.5-5.5	0	0	0	0
	43-53	---	---	---	---	---	---	---
333: Stirrup-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	15-20	5.0-10	4.5-5.5	0	0	0	0
	4-8	40-65	15-25	4.5-5.5	0	0	0	0
	8-24	25-35	10-15	4.5-5.5	0	0	0	0
	24-36	10-20	5.0-10	4.5-5.5	0	0	0	0
	36-43	5.0-15	2.0-5.0	4.5-5.5	0	0	0	0
	43-53	---	---	---	---	---	---	---
334: Stirrup-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	15-20	5.0-10	4.5-5.5	0	0	0	0
	4-8	40-65	15-25	4.5-5.5	0	0	0	0
	8-24	25-35	10-15	4.5-5.5	0	0	0	0
	24-36	10-20	5.0-10	4.5-5.5	0	0	0	0
	36-43	5.0-15	2.0-5.0	4.5-5.5	0	0	0	0
	43-53	---	---	---	---	---	---	---
335: Vabus-----	0-4	---	20-30	4.5-5.5	0	---	0	0
	4-7	10-15	45-70	3.5-6.0	0	0	0	0
	7-13	25-35	10-15	3.5-5.9	0	0	0	0
	13-18	10-30	10-15	4.5-5.9	0	0	0	0
	18-35	10-15	10-15	4.5-6.0	0	0	0	0
	35-60	5.0-10	---	5.1-6.0	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
336: Ronsel-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	25-35	---	5.1-5.9	0	0	0	0
	9-18	10-15	---	5.1-6.0	0	0	0	0
	18-60	5.0-15	---	5.6-6.5	0	0	0	0
338: Gilpar-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-3	15-30	---	5.1-6.0	0	0	0	0
	3-9	15-30	---	5.1-5.9	0	0	0	0
	9-21	10-20	---	5.1-6.0	0	0	0	0
	21-35	5.0-15	---	5.1-6.0	0	0	0	0
	35-60	5.0-15	---	5.1-6.0	0	0	0	0
346: Gilpar-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-3	15-30	---	5.1-6.0	0	0	0	0
	3-9	15-30	---	5.1-5.9	0	0	0	0
	9-21	10-20	---	5.1-6.0	0	0	0	0
	21-35	5.0-15	---	5.1-6.0	0	0	0	0
	35-60	5.0-15	---	5.1-6.0	0	0	0	0
347: Gilpar-----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-3	15-30	---	5.1-6.0	0	0	0	0
	3-9	15-30	---	5.1-5.9	0	0	0	0
	9-21	10-20	---	5.1-6.0	0	0	0	0
	21-35	5.0-15	---	5.1-6.0	0	0	0	0
	35-60	5.0-15	---	5.1-6.0	0	0	0	0
402: Esmeralda, bouldery surface-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-3	10-20	---	5.1-6.0	0	0	0	0
	3-10	15-30	---	5.1-6.0	0	0	0	0
	10-44	10-15	---	5.1-6.0	0	0	0	0
	44-60	5.0-15	---	5.1-6.0	0	0	0	0
Rock outcrop-----	0-60	---	---	---	---	---	---	---
404: Polallie-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-2	10-15	---	5.1-6.0	0	0	0	0
	2-3	25-35	---	5.1-5.9	0	0	0	0
	3-14	15-30	---	5.1-6.0	0	0	0	0
	14-26	10-15	---	5.1-6.0	0	0	0	0
	26-38	5.0-10	---	5.1-6.0	0	0	0	0
	38-47	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
405: Polallie-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-2	10-15	---	5.1-6.0	0	0	0	0
	2-3	25-35	---	5.1-5.9	0	0	0	0
	3-14	15-30	---	5.1-6.0	0	0	0	0
	14-26	10-15	---	5.1-6.0	0	0	0	0
	26-38	5.0-10	---	5.1-6.0	0	0	0	0
	38-47	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
406: Polallie-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-2	10-15	---	5.1-6.0	0	0	0	0
	2-3	25-35	---	5.1-5.9	0	0	0	0
	3-14	15-30	---	5.1-6.0	0	0	0	0
	14-26	10-15	---	5.1-6.0	0	0	0	0
	26-38	5.0-10	---	5.1-6.0	0	0	0	0
	38-47	---	---	---	---	---	---	---
408: Rock outcrop-----	0-60	---	---	---	---	---	---	---
Domerie-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	10-15	---	5.1-6.0	0	0	0	0
	9-34	10-15	---	5.1-6.0	0	0	0	0
	34-41	5.0-15	---	5.1-6.0	0	0	0	0
	41-56	5.0-15	---	5.1-6.0	0	0	0	0
	56-60	---	---	---	---	---	---	---
409: Domerie, warm-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-4	10-15	---	5.1-6.0	0	0	0	0
	4-9	10-15	---	5.1-6.0	0	0	0	0
	9-34	10-15	---	5.1-6.0	0	0	0	0
	34-41	5.0-15	---	5.1-6.0	0	0	0	0
	41-56	5.0-15	---	5.1-6.0	0	0	0	0
	56-60	---	---	---	---	---	---	---
410: Tanaha-----	0-7	15-25	---	7.4-8.4	0	0	0.0-4.0	1-10
	7-12	10-20	---	7.4-8.4	0	0	0.0-4.0	1-10
	12-32	20-30	---	7.9-8.4	5-15	0	2.0-4.0	1-10
	32-38	10-20	---	7.9-8.4	5-15	0	2.0-4.0	1-10
	38-60	10-20	---	7.4-7.8	1-5	0	0.0-2.0	1-5
411: Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
414: Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
415: Benwy-----	0-10	10-20	---	6.1-7.8	0	0	0	0
	10-18	10-20	---	6.6-7.8	0	0	0	0
	18-33	10-20	---	7.4-7.8	0	0	0	0
	33-45	10-20	---	7.4-8.6	5-20	0	0.0-2.0	0-5
	45-55	---	---	---	---	---	---	---
417: Benwy-----	0-10	10-20	---	6.1-7.8	0	0	0	0
	10-18	10-20	---	6.6-7.8	0	0	0	0
	18-33	10-20	---	7.4-7.8	0	0	0	0
	33-45	10-20	---	7.4-8.6	5-20	0	0.0-2.0	0-5
	45-55	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
422: Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
424: Cleman-----	0-14	10-15	---	6.6-7.8	0	0	0	0
	14-42	5.0-10	---	6.6-7.8	0	0	0	0
	42-60	5.0-10	---	7.4-8.4	1-5	0	0.0-2.0	0-2
427: Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
429: Grinrod-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-27	20-30	---	6.6-7.3	0	0	0	0
	27-37	---	---	---	---	---	---	---
Horseflat-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-16	10-20	---	6.6-7.8	0	0	0	0
	16-26	---	---	---	---	---	---	---
431: Grinrod-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-27	20-30	---	6.6-7.3	0	0	0	0
	27-37	---	---	---	---	---	---	---
Horseflat-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-16	10-20	---	6.6-7.8	0	0	0	0
	16-26	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	0	0	0	0
433: Kiona-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-21	10-20	---	7.4-8.4	1-5	0	0	0
	21-60	10-20	---	7.9-8.4	1-5	0	0.0-2.0	0-2
Rubble land-----	0-60	---	---	---	---	---	---	---
434: Laufer-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-7	15-25	---	6.6-7.3	0	0	0	0
	7-10	20-30	---	6.6-7.8	0	0	0	0
	10-15	30-40	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Thiessen-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-9	25-30	---	6.6-7.8	0	0	0	0
	9-22	25-35	---	6.6-7.8	0	0	0	0
	22-32	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
438: Blint-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-18	15-25	---	6.6-7.3	0	0	0	0
	18-22	15-25	---	6.6-7.3	1-5	0	0	0
	22-32	---	---	---	---	---	---	---
440: Nitzel-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-29	10-20	---	6.6-7.3	0	0	0	0
	29-46	10-20	---	6.6-7.3	0	0	0	0
	46-60	10-20	---	6.6-7.3	0	0	0	0
450: Argixerolls, south slopes-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-37	20-30	---	6.6-7.8	0	0	0	0
	37-60	20-30	---	7.4-7.8	1-5	0	0.0-2.0	0-5
Durixerolls, south slopes-----	0-9	10-20	---	6.6-7.3	0-5	0	0	0
	9-12	15-25	---	7.4-8.4	0-5	0	0	0
	12-21	15-25	---	7.4-8.4	5-25	0	0.0-2.0	0-1
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
452: Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
Zen-----	0-7	10-20	---	6.6-7.8	0	0	0	0
	7-12	10-20	---	6.6-7.8	0	0	0	0
	12-27	10-20	---	6.6-7.8	0	0	0	0
	27-30	10-20	---	7.4-8.6	5-15	0	0.0-2.0	0-2
	30-40	---	---	---	---	---	---	---
Grinrod-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-27	20-30	---	6.6-7.3	0	0	0	0
	27-37	---	---	---	---	---	---	---
456: Cheviot-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-16	10-20	---	6.6-7.8	0	0	0	0
	16-44	10-20	---	6.6-7.8	0	0	0	0
	44-49	10-15	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	49-60	10-15	---	7.4-8.4	1-5	0	0.0-2.0	0-1
Rubble land-----	0-60	---	---	---	---	---	---	---
457: Cheviot-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-16	10-20	---	6.6-7.8	0	0	0	0
	16-44	10-20	---	6.6-7.8	0	0	0	0
	44-49	10-15	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	49-60	10-15	---	7.4-8.4	1-5	0	0.0-2.0	0-1

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
458:								
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Cheviot-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-16	10-20	---	6.6-7.8	0	0	0	0
	16-44	10-20	---	6.6-7.8	0	0	0	0
	44-49	10-15	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	49-60	10-15	---	7.4-8.4	1-5	0	0.0-2.0	0-1
460:								
Neviot-----	0-6	10-20	---	6.6-7.3	0	0	0	0
	6-12	10-20	---	6.6-7.3	0	0	0	0
	12-22	10-20	---	6.6-7.8	0	0	0	0
	22-40	10-20	---	6.6-7.8	0	0	0	---
	40-49	10-20	---	7.4-8.4	0	0	0	0
	49-60	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-1
Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
461:								
Kiona-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-21	10-20	---	7.4-8.4	1-5	0	0	0
	21-60	10-20	---	7.9-8.4	1-5	0	0.0-2.0	0-2
465:								
Horseflat-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-16	10-20	---	6.6-7.8	0	0	0	0
	16-26	---	---	---	---	---	---	---
466:								
Benwy-----	0-10	10-20	---	6.1-7.8	0	0	0	0
	10-18	10-20	---	6.6-7.8	0	0	0	0
	18-33	10-20	---	7.4-7.8	0	0	0	0
	33-45	10-20	---	7.4-8.6	5-20	0	0.0-2.0	0-5
	45-55	---	---	---	---	---	---	---
470:								
Weirman-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
476: Ralock-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-14	10-20	---	6.6-7.8	0	0	0	0
	14-27	15-25	---	6.6-7.8	0	0	0	0
	27-36	15-25	---	7.4-8.4	15-35	0	0.0-2.0	0-1
	36-60	15-25	---	7.4-8.4	5-20	0	0.0-2.0	0-1
Horseflat-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-16	10-20	---	6.6-7.8	0	0	0	0
	16-26	---	---	---	---	---	---	---
480: Nanum-----	0-8	15-25	---	6.1-7.8	0	0	0	0
	8-15	15-25	---	6.6-7.8	0	0	0	0
	15-28	20-30	---	6.6-7.8	0	0	0	0
	28-35	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
	35-60	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
481: Nanum-----	0-8	15-25	---	6.1-7.8	0	0	0	0
	8-15	15-25	---	6.6-7.8	0	0	0	0
	15-28	20-30	---	6.6-7.8	0	0	0	0
	28-35	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
	35-60	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
482: Rollinger-----	0-6	10-20	---	6.6-7.4	0	0	0	0
	6-11	10-20	---	6.6-7.4	0	0	0	0
	11-32	15-25	---	6.6-7.8	0	0	0	0
	32-41	10-20	---	7.4-7.8	0	0	0	0
	41-54	10-20	---	7.4-8.4	5-10	0	0.0-2.0	0-2
	54-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2
485: Rollinger-----	0-6	10-20	---	6.6-7.4	0	0	0	0
	6-11	10-20	---	6.6-7.4	0	0	0	0
	11-32	15-25	---	6.6-7.8	0	0	0	0
	32-41	10-20	---	7.4-7.8	0	0	0	0
	41-54	10-20	---	7.4-8.4	5-10	0	0.0-2.0	0-2
	54-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2
487: Rollinger-----	0-6	10-20	---	6.6-7.4	0	0	0	0
	6-11	10-20	---	6.6-7.4	0	0	0	0
	11-32	15-25	---	6.6-7.8	0	0	0	0
	32-41	10-20	---	7.4-7.8	0	0	0	0
	41-54	10-20	---	7.4-8.4	5-10	0	0.0-2.0	0-2
	54-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2
489: Rollinger-----	0-6	10-20	---	6.6-7.4	0	0	0	0
	6-11	10-20	---	6.6-7.4	0	0	0	0
	11-32	15-25	---	6.6-7.8	0	0	0	0
	32-41	10-20	---	7.4-7.8	0	0	0	0
	41-54	10-20	---	7.4-8.4	5-10	0	0.0-2.0	0-2
	54-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
492: Rollinger-----	0-6	10-20	---	6.6-7.4	0	0	0	0
	6-11	10-20	---	6.6-7.4	0	0	0	0
	11-32	15-25	---	6.6-7.8	0	0	0	0
	32-41	10-20	---	7.4-7.8	0	0	0	0
	41-54	10-20	---	7.4-8.4	5-10	0	0.0-2.0	0-2
	54-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2
493: Rollinger-----	0-6	10-20	---	6.6-7.4	0	0	0	0
	6-11	10-20	---	6.6-7.4	0	0	0	0
	11-32	15-25	---	6.6-7.8	0	0	0	0
	32-41	10-20	---	7.4-7.8	0	0	0	0
	41-54	10-20	---	7.4-8.4	5-10	0	0.0-2.0	0-2
	54-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2
494: Caliralls-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-12	10-20	---	6.6-7.3	0	0	0	0
	12-31	10-20	---	6.6-7.8	0	0	0	0
	31-52	10-20	---	7.4-8.4	20-35	0	0.0-2.0	0-2
	52-60	10-25	---	7.9-8.5	25-40	0	0.0-2.0	0-2
495: Caliralls-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-12	10-20	---	6.6-7.3	0	0	0	0
	12-31	10-20	---	6.6-7.8	0	0	0	0
	31-52	10-20	---	7.4-8.4	20-35	0	0.0-2.0	0-2
	52-60	10-25	---	7.9-8.5	25-40	0	0.0-2.0	0-2
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
497: Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
498: Caliralls-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-12	10-20	---	6.6-7.3	0	0	0	0
	12-31	10-20	---	6.6-7.8	0	0	0	0
	31-52	10-20	---	7.4-8.4	20-35	0	0.0-2.0	0-2
	52-60	10-25	---	7.9-8.5	25-40	0	0.0-2.0	0-2
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
500: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
502: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
503: Terlan-----	0-7	10-20	---	5.6-7.3	0	0	0.0-2.0	0
	7-15	15-25	---	6.1-7.3	0	0	0.0-2.0	0
	15-18	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	18-26	---	---	---	---	---	---	---
	26-60	---	---	---	---	---	---	---
Durtash-----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
509: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
511: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
512: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
513: Meloza-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-30	30-50	---	6.6-7.8	0	0	0	0
	30-42	30-50	---	7.4-8.4	1-20	0	0.0-4.0	0-1
	42-60	20-50	---	7.4-8.4	1-20	0	0.0-4.0	0-1
Cowiche-----	0-15	10-20	---	6.6-7.8	0	0	0	0
	15-35	15-25	---	6.6-7.8	0	0	0	0
	35-51	15-25	---	7.4-8.4	3-10	0	0.0-2.0	0-1
	51-60	5.0-15	---	7.4-8.4	5-15	0	0.0-2.0	0-1
516: Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
517: Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
519: Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
523: Terlan-----	0-7	10-20	---	5.6-7.3	0	0	0.0-2.0	0
	7-15	15-25	---	6.1-7.3	0	0	0.0-2.0	0
	15-18	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	18-26	---	---	---	---	---	---	---
	26-60	---	---	---	---	---	---	---
524: Terlan-----	0-7	10-20	---	5.6-7.3	0	0	0.0-2.0	0
	7-15	15-25	---	6.1-7.3	0	0	0.0-2.0	0
	15-18	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	18-26	---	---	---	---	---	---	---
	26-60	---	---	---	---	---	---	---
525: Terlan-----	0-7	10-20	---	5.6-7.3	0	0	0.0-2.0	0
	7-15	15-25	---	6.1-7.3	0	0	0.0-2.0	0
	15-18	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	18-26	---	---	---	---	---	---	---
	26-60	---	---	---	---	---	---	---
532: Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
532: Terlan-----	0-7	10-20	---	5.6-7.3	0	0	0.0-2.0	0
	7-15	15-25	---	6.1-7.3	0	0	0.0-2.0	0
	15-18	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	18-26	---	---	---	---	---	---	---
	26-60	---	---	---	---	---	---	---
533: Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
535: Zen-----	0-7	10-20	---	6.6-7.8	0	0	0	0
	7-12	10-20	---	6.6-7.8	0	0	0	0
	12-27	10-20	---	6.6-7.8	0	0	0	0
	27-30	10-20	---	7.4-8.6	5-15	0	0.0-2.0	0-2
	30-40	---	---	---	---	---	---	---
538: Zen-----	0-7	10-20	---	6.6-7.8	0	0	0	0
	7-12	10-20	---	6.6-7.8	0	0	0	0
	12-27	10-20	---	6.6-7.8	0	0	0	0
	27-30	10-20	---	7.4-8.6	5-15	0	0.0-2.0	0-2
	30-40	---	---	---	---	---	---	---
539: Zen-----	0-7	10-20	---	6.6-7.8	0	0	0	0
	7-12	10-20	---	6.6-7.8	0	0	0	0
	12-27	10-20	---	6.6-7.8	0	0	0	0
	27-30	10-20	---	7.4-8.6	5-15	0	0.0-2.0	0-2
	30-40	---	---	---	---	---	---	---
553: Ralock-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-14	10-20	---	6.6-7.8	0	0	0	0
	14-27	15-25	---	6.6-7.8	0	0	0	0
	27-36	15-25	---	7.4-8.4	15-35	0	0.0-2.0	0-1
	36-60	15-25	---	7.4-8.4	5-20	0	0.0-2.0	0-1
554: Pachneum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.1-7.3	0	0	0	0
	18-26	20-30	---	6.6-7.3	0	0	0	0
	26-33	20-30	---	6.6-7.3	0	0	0	0
	33-47	20-30	---	6.6-7.3	0	0	0	0
	47-60	20-30	---	6.6-7.3	0	0	0	0
557: Pachneum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.1-7.3	0	0	0	0
	18-26	20-30	---	6.6-7.3	0	0	0	0
	26-33	20-30	---	6.6-7.3	0	0	0	0
	33-47	20-30	---	6.6-7.3	0	0	0	0
	47-60	20-30	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
558: Argixerolls, north slopes-----	0-14	10-20	---	6.6-7.3	0	0	0	0
	14-42	20-30	---	6.6-7.8	0	0	0	0
	42-60	20-30	---	7.4-7.8	1-5	0	0.0-2.0	0-5
Durixerolls, north slopes-----	0-9	10-20	---	6.6-7.3	0-5	0	0	0
	9-12	15-25	---	7.4-8.4	0-5	0	0	0
	12-21	15-25	---	7.4-8.4	5-25	0	0.0-2.0	0-1
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
561: Elkheights-----	0-8	10-20	---	5.6-7.3	0	0	0	0
	8-19	10-20	---	6.1-7.3	0	0	0	0
	19-41	10-20	---	6.1-7.3	0	0	0	0
	41-56	15-25	---	6.6-7.3	0	0	0	0
	56-60	15-25	---	6.1-7.3	0	0	0	0
563: Mendian-----	0-6	10-20	---	5.1-6.5	0	0	0	0
	6-13	10-20	---	5.1-6.5	0	0	0	0
	13-22	10-20	---	5.6-7.3	0	0	0	0
	22-38	15-25	---	6.6-7.3	0	0	0	0
	38-46	15-25	---	6.6-7.3	0	0	0	0
	46-60	15-25	---	6.6-7.3	0	0	0	0
570: Wipple-----	0-7	20-30	---	6.6-7.3	0	0	0	0
	7-11	35-50	---	6.6-7.8	0	0	0	0
	11-30	35-50	---	7.4-8.4	0	0	0.0-2.0	0
	30-50	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	50-60	---	---	---	---	---	---	---
571: Wipple-----	0-7	20-30	---	6.6-7.3	0	0	0	0
	7-11	35-50	---	6.6-7.8	0	0	0	0
	11-30	35-50	---	7.4-8.4	0	0	0.0-2.0	0
	30-50	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	50-60	---	---	---	---	---	---	---
580: Woldale-----	0-5	20-30	---	7.4-8.4	0	0	0.0-2.0	0-2
	5-31	30-50	---	7.4-8.4	0	0	0.0-2.0	0-2
	31-43	30-50	---	7.4-8.4	0	0	0.0-2.0	0-2
	43-60	20-30	---	7.4-8.4	0	0	0.0-2.0	0-2
584: Varodale-----	0-22	30-50	---	6.6-7.3	0	0	0	0
	22-38	30-50	---	6.6-7.3	0	0	0	0
	38-44	0.0-50	---	6.6-7.3	0	0	0	0
	44-60	30-50	---	6.6-7.3	0	0	0	0
585: Varodale-----	0-22	30-50	---	6.6-7.3	0	0	0	0
	22-38	30-50	---	6.6-7.3	0	0	0	0
	38-44	30-50	---	6.6-7.3	0	0	0	0
	44-60	30-50	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
586: Vanderbilt, moderately wet-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-28	15-25	---	6.1-7.3	0	0	0	0
	28-38	20-30	---	6.6-7.3	0	0	0	0
	38-60	20-30	---	6.6-7.3	0	0	0	0
587: Argixerolls-----	0-17	10-20	---	6.6-7.3	0	0	0	0
	17-49	20-30	---	6.6-7.8	0	0	0	0
	49-60	20-30	---	7.4-7.8	1-5	0	0.0-2.0	0-5
589: Nack-----	0-6	10-20	---	7.9-8.4	0-5	0	0.0-2.0	1-5
	6-15	15-25	---	7.9-9.0	1-15	0	0.0-4.0	1-5
	15-60	15-30	---	7.4-8.4	0-5	0	0.0-2.0	0-1
Brickmill-----	0-12	15-25	---	6.1-7.3	0	0	0	0
	12-28	10-20	---	6.6-7.8	0	0	0	0
	28-38	10-20	---	6.6-7.8	0	0	0	0
	38-49	10-20	---	6.6-7.8	0	0	0	0
	49-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-1
590: Brickmill-----	0-12	15-25	---	6.1-7.3	0	0	0	0
	12-28	10-20	---	6.6-7.8	0	0	0	0
	28-38	10-20	---	6.6-7.8	0	0	0	0
	38-49	10-20	---	6.6-7.8	0	0	0	0
	49-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-1
Nanum-----	0-8	15-25	---	6.1-7.8	0	0	0	0
	8-15	15-25	---	6.6-7.8	0	0	0	0
	15-28	20-30	---	6.6-7.8	0	0	0	0
	28-35	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
	35-60	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
592: Umtanum-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-16	15-25	---	6.6-7.3	0	0	0	0
	16-42	25-40	---	6.6-7.3	0	0	0	0
	42-60	25-40	---	6.6-7.3	0	0	0	0
593: Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
Whiskeydick-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	30-40	---	6.6-7.3	0	0	0	0
	10-27	30-45	---	6.6-7.8	0	0	0	0
	27-37	---	---	---	---	---	---	---
594: Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
594: Whiskeydick-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	30-40	---	6.6-7.3	0	0	0	0
	10-27	30-45	---	6.6-7.8	0	0	0	0
	27-37	---	---	---	---	---	---	---
595: Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
Whiskeydick-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	30-40	---	6.6-7.3	0	0	0	0
	10-27	30-45	---	6.6-7.8	0	0	0	0
	27-37	---	---	---	---	---	---	---
598: Zillah-----	0-7	15-25	---	6.1-7.8	0	0	0	0
	7-15	15-25	---	6.6-7.8	0	0	0	0
	15-32	10-20	---	6.6-7.8	0	0	0	0
	32-51	10-20	---	6.6-7.8	0	0	0	0
	51-60	5.0-10	---	6.6-7.8	0	0	0	0
601: Brickmill-----	0-12	15-25	---	6.1-7.3	0	0	0	0
	12-28	10-20	---	6.6-7.8	0	0	0	0
	28-38	10-20	---	6.6-7.8	0	0	0	0
	38-49	10-20	---	6.6-7.8	0	0	0	0
	49-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-1
602: Brickmill-----	0-12	15-25	---	6.1-7.3	0	0	0	0
	12-28	10-20	---	6.6-7.8	0	0	0	0
	28-38	10-20	---	6.6-7.8	0	0	0	0
	38-49	10-20	---	6.6-7.8	0	0	0	0
	49-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-1
603: Reeser-----	0-6	20-30	---	6.1-7.3	0	0	0	0
	6-13	20-30	---	6.1-7.3	0	0	0	0
	13-22	45-55	---	6.1-7.3	0	0	0	0
	22-26	---	---	---	---	---	---	---
	26-58	---	---	---	---	---	---	---
	58-60	5.0-15	---	5.6-6.5	0	0	0	0
604: Reeser-----	0-6	20-30	---	6.1-7.3	0	0	0	0
	6-13	20-30	---	6.1-7.3	0	0	0	0
	13-22	45-55	---	6.1-7.3	0	0	0	0
	22-26	---	---	---	---	---	---	---
	26-58	---	---	---	---	---	---	---
	58-60	5.0-15	---	5.6-6.5	0	0	0	0
605: Disage-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-18	25-40	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
606: Disage-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-18	25-40	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
607: Disage-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-18	25-40	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Clenage-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-16	20-30	---	6.6-7.8	0	0	0	0
	16-25	30-40	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	25-35	---	---	---	---	---	---	---
609: Ackna-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.6-7.3	0	0	0	0
	18-28	15-25	---	6.6-7.3	0	0	0	0
	28-42	15-25	---	6.6-7.3	0	0	0	0
	42-55	10-25	---	6.6-7.3	0	0	0	0
	55-60	5.0-15	---	6.6-7.3	0	0	0	0
610: Ackna-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.6-7.3	0	0	0	0
	18-28	15-25	---	6.6-7.3	0	0	0	0
	28-42	15-25	---	6.6-7.3	0	0	0	0
	42-55	10-25	---	6.6-7.3	0	0	0	0
	55-60	5.0-15	---	6.6-7.3	0	0	0	0
612: Nitcha-----	0-12	15-25	---	6.1-7.3	0	0	0	0
	12-42	10-20	---	6.1-7.3	0	0	0	0
	42-60	10-20	---	6.6-7.3	0	0	0	0
614: Camaspach-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
618: Nitzel, gravelly substratum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-29	10-20	---	6.6-7.3	0	0	0	0
	29-46	10-20	---	6.6-7.3	0	0	0	0
	46-60	10-20	---	6.6-7.3	0	0	0	0
621: Mitta, flooded-----	0-6	20-30	---	7.9-9.0	0-1	0	0.0-4.0	1-10
	6-15	20-30	---	7.9-9.0	0-1	0	0.0-4.0	1-10
	15-34	20-30	---	7.4-8.4	0	0	0.0-2.0	0-5
	34-49	20-30	---	7.4-8.4	0	0	0.0-2.0	0-5
	49-60	20-30	---	7.4-7.8	0	0	0.0-2.0	0-5

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
622: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
623: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
624: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
625: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
Durtash-----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
626: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
626: Durtash-----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
632: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
633: Nack-----	0-6	15-25	---	7.9-8.4	0-5	0	0.0-2.0	1-5
	6-15	15-25	---	7.9-9.0	1-15	0	0.0-4.0	1-5
	15-60	15-30	---	7.4-8.4	0-5	0	0.0-2.0	0-1
634: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
Durtash-----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
635: Opnish-----	0-8	15-25	---	7.9-9.0	1-5	0	0.0-4.0	1-13
	8-13	15-25	---	7.9-9.0	5-10	0	0.0-4.0	1-13
	13-26	20-30	---	7.9-9.0	5-15	0	2.0-4.0	1-13
	26-60	20-30	---	7.4-8.4	5-15	0	0.0-4.0	1-10
637: Tanksel-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
Lainand-----	0-6	10-20	---	6.1-7.3	0	0	0	0
	6-12	10-20	---	6.1-7.3	0	0	0	0
	12-20	10-20	---	6.1-7.3	0	0	0	0
	20-41	20-30	---	6.1-7.3	0	0	0	0
	41-60	15-30	---	6.1-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
638:								
Tanksel-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
Lainand-----	0-6	10-20	---	6.1-7.3	0	0	0	0
	6-12	10-20	---	6.1-7.3	0	0	0	0
	12-20	10-20	---	6.1-7.3	0	0	0	0
	20-41	20-30	---	6.1-7.3	0	0	0	0
	41-60	15-30	---	6.1-7.3	0	0	0	0
Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
640:								
Elkheights-----	0-8	10-20	---	5.6-7.3	0	0	0	0
	8-19	10-20	---	6.1-7.3	0	0	0	0
	19-41	10-20	---	6.1-7.3	0	0	0	0
	41-56	15-25	---	6.6-7.3	0	0	0	0
	56-60	15-25	---	6.1-7.3	0	0	0	0
644:								
Drino-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-19	10-20	---	6.6-7.8	0-2	0	0	0
	19-38	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	38-48	---	---	---	---	---	---	---
Sohappy-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-32	10-20	---	6.6-8.0	1-5	0	0	0
	32-43	10-20	---	7.9-9.0	5-20	0	0.0-2.0	0
	43-51	10-20	---	7.9-9.0	15-35	0	0.0-2.0	0
	51-60	---	---	---	---	---	---	---
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
650:								
Tanksel-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
Patron-----	0-12	10-20	---	6.6-7.3	0	0	0	0
	12-35	25-35	---	6.6-7.8	0	0	0	0
	35-60	25-35	---	6.6-7.8	0	0	0	0
Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
656:								
Tanksele-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
Patron-----	0-12	10-20	---	6.6-7.3	0	0	0	0
	12-35	25-35	---	6.6-7.8	0	0	0	0
	35-60	25-35	---	6.6-7.8	0	0	0	0
Camaspach-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
658:								
Camaspach-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
Tanksele-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
661:								
Drysele-----	0-11	10-20	---	6.6-7.8	0	0	0	0
	11-27	10-20	---	7.4-7.8	0	0	0.0-2.0	0
	27-31	10-20	---	7.4-8.4	5-20	0	0.0-2.0	0
	31-41	---	---	---	---	---	---	---
662:								
Ralock-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-14	10-20	---	6.6-7.8	0	0	0	0
	14-27	15-25	---	6.6-7.8	0	0	0	0
	27-36	15-25	---	7.4-8.4	15-35	0	0.0-2.0	0-1
	36-60	15-25	---	7.4-8.4	5-20	0	0.0-2.0	0-1
Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
663:								
Ralock-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-14	10-20	---	6.6-7.8	0	0	0	0
	14-27	15-25	---	6.6-7.8	0	0	0	0
	27-36	15-25	---	7.4-8.4	15-35	0	0.0-2.0	0-1
	36-60	15-25	---	7.4-8.4	5-20	0	0.0-2.0	0-1
Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
667:								
Laufer-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-7	15-25	---	6.6-7.3	0	0	0	0
	7-10	20-30	---	6.6-7.8	0	0	0	0
	10-15	30-40	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Thiessen-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-9	25-30	---	6.6-7.8	0	0	0	0
	9-22	25-35	---	6.6-7.8	0	0	0	0
	22-32	---	---	---	---	---	---	---
668:								
Laufer-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-7	15-25	---	6.6-7.3	0	0	0	0
	7-10	20-30	---	6.6-7.8	0	0	0	0
	10-15	30-40	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Thiessen-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-9	25-30	---	6.6-7.8	0	0	0	0
	9-22	25-35	---	6.6-7.8	0	0	0	0
	22-32	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
669:								
Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
Zen-----	0-7	10-20	---	6.6-7.8	0	0	0	0
	7-12	10-20	---	6.6-7.8	0	0	0	0
	12-27	10-20	---	6.6-7.8	0	0	0	0
	27-30	10-20	---	7.4-8.6	5-15	0	0.0-2.0	0-2
	30-40	---	---	---	---	---	---	---
Grinrod-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-27	20-30	---	6.6-7.3	0	0	0	0
	27-37	---	---	---	---	---	---	---
670:								
Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
Whiskeydick-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	30-40	---	6.6-7.3	0	0	0	0
	10-27	30-45	---	6.6-7.8	0	0	0	0
	27-37	---	---	---	---	---	---	---
672:								
Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
672: Mozen-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-13	10-20	---	6.6-7.8	0	0	0	0
	13-22	20-30	---	6.6-7.8	0	0	0	0
	22-28	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	28-39	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	39-49	---	---	---	---	---	---	---
674: Durtash, gravelly----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
684: Nitzel-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-29	10-20	---	6.6-7.3	0	0	0	0
	29-46	10-20	---	6.6-7.3	0	0	0	0
	46-60	10-20	---	6.6-7.3	0	0	0	0
Weirman-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
693: Tankse-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
Wockum-----	0-17	10-20	---	6.6-7.3	0	0	0	0
	17-59	15-25	---	6.6-7.8	0	0	0	0
	59-60	15-25	---	7.4-8.4	1-5	0	0.0-2.0	0-2
695: Drino-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-19	10-20	---	6.6-7.8	0-2	0	0	0
	19-38	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	38-48	---	---	---	---	---	---	---
Sohappy-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-32	10-20	---	6.6-8.0	1-5	0	0	0
	32-43	10-20	---	7.9-9.0	5-20	0	0.0-2.0	0
	43-51	10-20	---	7.9-9.0	15-35	0	0.0-2.0	0
	51-60	---	---	---	---	---	---	---
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
697: Wockum-----	0-17	10-20	---	6.6-7.3	0	0	0	0
	17-59	15-25	---	6.6-7.8	0	0	0	0
	59-60	15-25	---	7.4-8.4	1-5	0	0.0-2.0	0-2

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
697:								
Blint-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-18	15-25	---	6.6-7.3	0	0	0	0
	18-22	15-25	---	6.6-7.3	1-5	0	0	0
	22-32	---	---	---	---	---	---	---
698:								
Wockum-----	0-17	10-20	---	6.6-7.3	0	0	0	0
	17-59	15-25	---	6.6-7.8	0	0	0	0
	59-60	15-25	---	7.4-8.4	1-5	0	0.0-2.0	0-2
Blint-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-18	15-25	---	6.6-7.3	0	0	0	0
	18-22	15-25	---	6.6-7.3	1-5	0	0	0
	22-32	---	---	---	---	---	---	---
Windry-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-15	10-20	---	6.6-7.8	0	0	0	0
	15-19	---	---	---	---	---	---	---
706:								
Kayak-----	0-6	15-25	---	5.1-6.5	0	0	0	0
	6-17	10-20	---	6.6-7.8	0	0	0	0
	17-29	10-20	---	6.6-7.8	0	0	0	0
	29-39	10-20	---	6.6-7.8	0	0	0	0
	39-60	5.0-10	---	6.6-7.8	0	0	0	0
712:								
Malaga-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-12	10-20	---	6.6-7.8	0	0	0	0
	12-19	10-20	---	6.6-7.8	0	0	0	0
	19-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0
713:								
Malaga-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-12	10-20	---	6.6-7.8	0	0	0	0
	12-19	10-20	---	6.6-7.8	0	0	0	0
	19-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0
715:								
Weirman-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
717:								
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Drino-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-19	10-20	---	6.6-7.8	0-2	0	0	0
	19-38	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	38-48	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
717: Nevo-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-8	15-25	---	6.6-7.8	0	0	0	0
	8-18	---	---	---	---	---	---	---
718: Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Drino-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-19	10-20	---	6.6-7.8	0-2	0	0	0
	19-38	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	38-48	---	---	---	---	---	---	---
Nevo-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-8	15-25	---	6.6-7.8	0	0	0	0
	8-18	---	---	---	---	---	---	---
720: Nanum-----	0-6	15-25	---	6.1-7.8	0	0	0	0
	6-15	15-25	---	6.6-7.8	0	0	0	0
	15-28	20-30	---	6.6-7.8	0	0	0	0
	28-35	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
	35-60	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
724: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
Durtash-----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
725: Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
741: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-26	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
741: Vantage, thin surface	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
742: Drino-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-19	10-20	---	6.6-7.8	0-2	0	0	0
	19-38	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	38-48	---	---	---	---	---	---	---
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
744: Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
745: Zen-----	0-7	10-20	---	6.6-7.8	0	0	0	0
	7-12	10-20	---	6.6-7.8	0	0	0	0
	12-27	10-20	---	6.6-7.8	0	0	0	0
	27-30	10-20	---	7.4-8.6	5-15	0	0.0-2.0	0-2
	30-40	---	---	---	---	---	---	---
Benwy-----	0-10	10-20	---	6.1-7.8	0	0	0	0
	10-18	10-20	---	6.6-7.8	0	0	0	0
	18-33	10-20	---	7.4-7.8	0	0	0	0
	33-45	10-20	---	7.4-8.6	5-20	0	0.0-2.0	0-5
	45-55	---	---	---	---	---	---	---
Laric-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-9	10-20	---	6.6-7.8	0	0	0	0
	9-19	---	---	---	---	---	---	---
747: Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
Ralock-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-14	10-20	---	6.6-7.8	0	0	0	0
	14-27	15-25	---	6.6-7.8	0	0	0	0
	27-36	15-25	---	7.4-8.4	15-35	0	0.0-2.0	0-1
	36-60	15-25	---	7.4-8.4	5-20	0	0.0-2.0	0-1

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
747: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
748: Malaga-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-12	10-20	---	6.6-7.8	0	0	0	0
	12-19	10-20	---	6.6-7.8	0	0	0	0
	19-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0
751: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
755: Nevo-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-8	15-25	---	6.6-7.8	0	0	0	0
	8-18	---	---	---	---	---	---	---
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
758: Sohappy-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-32	10-20	---	6.6-8.0	1-5	0	0	0
	32-43	10-20	---	7.9-9.0	5-20	0	0.0-2.0	0
	43-51	10-20	---	7.9-9.0	15-35	0	0.0-2.0	0
	51-60	---	---	---	---	---	---	---
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
772: Haploxerolls-----	0-17	10-20	---	7.4-9.0	0-5	0	0.0-4.0	0-5
	17-60	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-5
Weirman-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
Aquolls-----	0-5	10-20	---	6.6-8.4	0	0	0.0-2.0	0-2
	5-12	10-20	---	6.6-8.4	0	0	0.0-2.0	0-2
	12-18	10-20	---	6.6-8.4	0	0	0.0-2.0	0-2
	18-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-2

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
774:								
Drino-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-19	10-20	---	6.6-7.8	0-2	0	0	0
	19-38	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	38-48	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
787:								
Terlan-----	0-7	10-20	---	5.6-7.3	0	0	0.0-2.0	0
	7-15	15-25	---	6.1-7.3	0	0	0.0-2.0	0
	15-18	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	18-26	---	---	---	---	---	---	---
	26-60	---	---	---	---	---	---	---
Durtash-----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
Selah-----	0-9	10-20	---	6.1-7.3	0	0	0	0
	9-17	10-20	---	6.6-7.8	0	0	0	0
	17-21	20-30	---	7.4-7.8	0-3	0	0.0-2.0	0-2
	21-31	---	---	---	---	---	---	---
	31-60	---	---	---	---	---	---	---
789:								
Deedale-----	0-12	20-30	---	7.4-8.4	0	0	0.0-2.0	0-2
	12-25	30-40	---	7.4-8.4	0	0	0.0-2.0	0-2
	25-31	30-40	---	7.4-8.4	0	0	0.0-2.0	0-2
	31-54	30-40	---	7.4-8.4	0	0	0.0-2.0	0-2
	54-60	20-30	---	7.4-8.4	0	0	0.0-2.0	0-2
790:								
Mitta-----	0-6	20-30	---	7.9-9.0	0-1	0	0.0-4.0	1-10
	6-15	20-30	---	7.9-9.0	0-1	0	0.0-4.0	1-10
	15-34	20-30	---	7.4-8.4	0	0	0.0-2.0	0-5
	34-49	20-30	---	7.4-8.4	0	0	0.0-2.0	0-5
	49-60	20-30	---	7.4-7.8	0	0	0.0-2.0	0-5
791:								
Mitta, drained-----	0-6	20-30	---	7.9-9.0	0-1	0	0.0-4.0	1-10
	6-15	20-30	---	7.9-9.0	0-1	0	0.0-4.0	1-10
	15-34	20-30	---	7.4-8.4	0	0	0.0-2.0	0-5
	34-49	20-30	---	7.4-8.4	0	0	0.0-2.0	0-5
	49-60	20-30	---	7.4-7.8	0	0	0.0-2.0	0-5
792:								
Brickmill-----	0-12	15-25	---	6.1-7.3	0	0	0	0
	12-28	10-20	---	6.6-7.8	0	0	0	0
	28-38	10-20	---	6.6-7.8	0	0	0	0
	38-49	10-20	---	6.6-7.8	0	0	0	0
	49-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-1

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
793:								
Zillah-----	0-7	15-25	---	6.1-7.8	0	0	0	0
	7-15	15-25	---	6.6-7.8	0	0	0	0
	15-32	10-20	---	6.6-7.8	0	0	0	0
	32-51	10-20	---	6.6-7.8	0	0	0	0
	51-60	5.0-10	---	6.6-7.8	0	0	0	0
Kayak-----	0-6	15-25	---	6.1-7.8	0	0	0	0
	6-17	10-20	---	6.6-7.8	0	0	0	0
	17-29	10-20	---	6.6-7.8	0	0	0	0
	29-39	10-20	---	6.6-7.8	0	0	0	0
	39-60	5.0-10	---	6.6-7.8	0	0	0	0
794:								
Kayak-----	0-6	15-25	---	6.1-7.8	0	0	0	0
	6-17	10-20	---	6.6-7.8	0	0	0	0
	17-29	10-20	---	6.6-7.8	0	0	0	0
	29-39	10-20	---	6.6-7.8	0	0	0	0
	39-60	5.0-10	---	6.6-7.8	0	0	0	0
Weirman-----	0-9	10-20	---	6.6-7.8	0	0	0	0
	9-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
795:								
Nack-----	0-6	10-20	---	7.9-8.4	0-5	0	0.0-2.0	1-5
	6-15	15-25	---	7.9-9.0	1-15	0	0.0-4.0	1-5
	15-60	15-30	---	7.4-8.4	0-5	0	0.0-2.0	0-1
Opnish-----	0-8	15-25	---	7.9-9.0	1-5	0	0.0-4.0	1-13
	8-13	15-25	---	7.9-9.0	5-10	0	0.0-4.0	1-13
	13-26	20-30	---	7.9-9.0	5-15	0	2.0-4.0	1-13
	26-60	20-30	---	7.4-8.4	5-15	0	0.0-4.0	1-10
796:								
Brickmill-----	0-12	15-25	---	6.1-7.3	0	0	0	0
	12-28	10-20	---	6.6-7.8	0	0	0	0
	28-38	10-20	---	6.6-7.8	0	0	0	0
	38-49	10-20	---	6.6-7.8	0	0	0	0
	49-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-1
Nack-----	0-6	10-20	---	7.9-8.4	0-5	0	0.0-2.0	1-5
	6-15	15-25	---	7.9-9.0	1-15	0	0.0-4.0	1-5
	15-60	15-30	---	7.4-8.4	0-5	0	0.0-2.0	0-1
797:								
Brysill-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-15	10-20	---	6.1-7.3	0	0	0	0
	15-25	10-20	---	6.6-7.3	0	0	0	0
	25-48	10-20	---	6.6-7.8	0	0	0	0
	48-60	5.0-10	---	6.6-7.8	0	0	0	0
799:								
Brysill-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-15	10-20	---	6.1-7.3	0	0	0	0
	15-25	10-20	---	6.6-7.3	0	0	0	0
	25-48	10-20	---	6.6-7.8	0	0	0	0
	48-60	5.0-10	---	6.6-7.8	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
800:								
Brysill-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-15	10-20	---	6.1-7.3	0	0	0	0
	15-25	10-20	---	6.6-7.3	0	0	0	0
	25-48	10-20	---	6.6-7.8	0	0	0	0
	48-60	5.0-10	---	6.6-7.8	0	0	0	0
801:								
Brysill-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-15	10-20	---	6.1-7.3	0	0	0	0
	15-25	10-20	---	6.6-7.3	0	0	0	0
	25-48	10-20	---	6.6-7.8	0	0	0	0
	48-60	5.0-10	---	6.6-7.8	0	0	0	0
802:								
Brysill-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-15	10-20	---	6.1-7.3	0	0	0	0
	15-25	10-20	---	6.6-7.3	0	0	0	0
	25-48	10-20	---	6.6-7.8	0	0	0	0
	48-60	5.0-10	---	6.6-7.8	0	0	0	0
803:								
Brysill-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-15	10-20	---	6.1-7.3	0	0	0	0
	15-25	10-20	---	6.6-7.3	0	0	0	0
	25-48	10-20	---	6.6-7.8	0	0	0	0
	48-60	5.0-10	---	6.6-7.8	0	0	0	0
804:								
Benwy-----	0-10	10-20	---	6.1-7.8	0	0	0	0
	10-18	10-20	---	6.6-7.8	0	0	0	0
	18-33	10-20	---	7.4-7.8	0	0	0	0
	33-45	10-20	---	7.4-8.6	5-20	0	0.0-2.0	0-5
	45-55	---	---	---	---	---	---	---
806:								
Weirman, very gravelly sandy loam	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
Weirman, very cobbly sandy loam-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
807:								
Brysill-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-15	10-20	---	6.1-7.3	0	0	0	0
	15-25	10-20	---	6.6-7.3	0	0	0	0
	25-48	10-20	---	6.6-7.8	0	0	0	0
	48-60	5.0-10	---	6.6-7.8	0	0	0	0
Ackna-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.6-7.3	0	0	0	0
	18-28	15-25	---	6.6-7.3	0	0	0	0
	28-42	15-25	---	6.6-7.3	0	0	0	0
	42-55	10-25	---	6.6-7.3	0	0	0	0
	55-60	5.0-15	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
809: Weirman-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
Kayak-----	0-6	10-15	---	6.1-6.5	0	0	0	0
	6-17	10-20	---	6.6-7.8	0	0	0	0
	17-29	10-20	---	6.6-7.8	0	0	0	0
	29-39	10-20	---	6.6-7.8	0	0	0	0
	39-60	5.0-10	---	6.6-7.8	0	0	0	0
Zillah-----	0-7	15-25	---	6.1-7.8	0	0	0	0
	7-15	15-25	---	6.6-7.8	0	0	0	0
	15-32	10-20	---	6.6-7.8	0	0	0	0
	32-51	10-20	---	6.6-7.8	0	0	0	0
	51-60	5.0-10	---	6.6-7.8	0	0	0	0
814: Argixerolls, moist, north slopes-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-12	20-30	---	6.1-7.3	0	0	0	0
	12-60	20-30	---	6.1-7.3	0	0	0	0
815: Argixerolls, moist, south slopes-----	0-6	15-25	---	6.1-7.3	0	0	0	0
	6-12	20-30	---	6.1-7.8	0	0	0	0
	12-22	20-30	---	6.1-7.8	0	0	0	0
	22-60	20-30	---	6.1-7.8	0	0	0	0
816: Patron, cobbly ash silt loam-----	0-12	10-20	---	6.6-7.3	0	0	0	0
	12-35	25-35	---	6.6-7.8	0	0	0	0
	35-60	25-35	---	6.6-7.8	0	0	0	0
Patron-----	0-12	10-20	---	6.6-7.3	0	0	0	0
	12-35	25-35	---	6.6-7.8	0	0	0	0
	35-60	25-35	---	6.6-7.8	0	0	0	0
817: Manastash-----	0-5	15-25	---	6.1-7.8	0	0	0	0
	5-10	15-25	---	6.6-7.8	0	0	0	0
	10-15	15-25	---	6.6-7.8	0	0	0	0
	15-22	25-35	---	6.6-7.8	0	0	0	0
	22-25	40-55	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	25-42	---	---	---	---	---	---	---
	42-60	---	---	---	---	---	---	---
818: Umtanum-----	0-9	15-25	---	6.1-7.3	0	0	0	0
	9-16	15-25	---	6.6-7.3	0	0	0	0
	16-42	25-40	---	6.6-7.3	0	0	0	0
	42-60	25-40	---	6.6-7.3	0	0	0	0
819: Millhouse-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-14	15-25	---	6.1-7.3	0	0	0	0
	14-28	10-20	---	6.6-7.3	0	0	0	0
	28-60	5.0-15	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
820:								
Modsel, ashy loam----	0-7	15-25	---	6.1-7.3	0	0	0	0
	7-10	20-40	---	6.6-7.3	0	0	0	0
	10-16	25-30	---	6.6-7.3	0	0	0	0
	16-20	30-40	---	6.6-7.3	0	0	0	0
	20-60	25-30	---	6.6-7.3	0	0	0	0
Modsel, cobbly ashy loam-----	0-7	15-25	---	6.1-7.3	0	0	0	0
	7-10	20-40	---	6.6-7.3	0	0	0	0
	10-16	25-30	---	6.6-7.3	0	0	0	0
	16-20	30-40	---	6.6-7.3	0	0	0	0
	20-60	25-30	---	6.6-7.3	0	0	0	0
822:								
Reeser-----	0-6	20-30	---	6.1-7.3	0	0	0	0
	6-13	20-30	---	6.1-7.3	0	0	0	0
	13-22	45-55	---	6.1-7.3	0	0	0	0
	22-26	---	---	---	---	---	---	---
	26-58	---	---	---	---	---	---	---
	58-60	5.0-15	---	5.6-6.5	0	0	0	0
Reelow-----	0-2	20-30	---	6.1-7.3	0	0	0	0
	2-6	15-25	---	6.1-7.3	0	0	0	0
	6-14	45-55	---	6.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---	---
	18-56	---	---	---	---	---	---	---
	56-60	5.0-15	---	6.1-7.3	0	0	0	0
Sketter-----	0-6	15-25	---	6.1-7.3	0	0	0	0
	6-10	15-25	---	6.1-7.3	0	0	0	0
	10-21	25-35	---	6.1-7.3	0	0	0	0
	21-24	---	---	---	---	---	---	---
	24-55	---	---	---	---	---	---	---
	55-60	5.0-15	---	5.6-6.5	0	0	0	0
823:								
Millhouse-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-14	15-25	---	6.1-7.3	0	0	0	0
	14-28	10-20	---	6.6-7.3	0	0	0	0
	28-60	5.0-15	---	6.6-7.3	0	0	0	0
824:								
Pachneum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.1-7.3	0	0	0	0
	18-26	20-30	---	6.6-7.3	0	0	0	0
	26-33	20-30	---	6.6-7.3	0	0	0	0
	33-47	20-30	---	6.6-7.3	0	0	0	0
	47-60	20-30	---	6.6-7.3	0	0	0	0
825:								
Pachneum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.1-7.3	0	0	0	0
	18-26	20-30	---	6.6-7.3	0	0	0	0
	26-33	20-30	---	6.6-7.3	0	0	0	0
	33-47	20-30	---	6.6-7.3	0	0	0	0
	47-60	20-30	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
828: Swauk-----	0-5	10-20	---	5.6-6.5	0	0	0	0
	5-18	20-30	---	6.1-6.5	0	0	0	0
	18-31	30-40	---	6.1-7.3	0	0	0	0
	31-60	20-30	---	6.1-7.3	0	0	0	0
829: Swauk-----	0-5	10-20	---	5.6-6.5	0	0	0	0
	5-18	20-30	---	6.1-6.5	0	0	0	0
	18-31	30-40	---	6.1-7.3	0	0	0	0
	31-60	20-30	---	6.1-7.3	0	0	0	0
830: Swauk-----	0-5	10-20	---	5.6-6.5	0	0	0	0
	5-18	20-30	---	6.1-6.5	0	0	0	0
	18-31	30-40	---	6.1-7.3	0	0	0	0
	31-60	20-30	---	6.1-7.3	0	0	0	0
Qualla-----	0-7	10-20	---	5.6-7.3	0	0	0	0
	7-28	10-20	---	6.1-7.3	0	0	0	0
	28-38	10-20	---	6.1-7.3	0	0	0	0
	38-42	20-30	---	6.6-7.3	0	0	0	0
	42-60	20-30	---	6.6-7.3	0	0	0	0
831: Qualla-----	0-7	10-20	---	5.6-7.3	0	0	0	0
	7-28	10-20	---	6.1-7.3	0	0	0	0
	28-38	10-20	---	6.1-7.3	0	0	0	0
	38-42	20-30	---	6.6-7.3	0	0	0	0
	42-60	20-30	---	6.6-7.3	0	0	0	0
832: Qualla-----	0-7	10-20	---	5.6-7.3	0	0	0	0
	7-28	10-20	---	6.1-7.3	0	0	0	0
	28-38	10-20	---	6.1-7.3	0	0	0	0
	38-42	20-30	---	6.6-7.3	0	0	0	0
	42-60	20-30	---	6.6-7.3	0	0	0	0
833: Swauk-----	0-5	10-20	---	5.6-6.5	0	0	0	0
	5-18	20-30	---	6.1-6.5	0	0	0	0
	18-31	30-40	---	6.1-7.3	0	0	0	0
	31-60	20-30	---	6.1-7.3	0	0	0	0
835: Swauk-----	0-5	10-20	---	5.6-6.5	0	0	0	0
	5-18	20-30	---	6.1-6.5	0	0	0	0
	18-31	30-40	---	6.1-7.3	0	0	0	0
	31-60	20-30	---	6.1-7.3	0	0	0	0
Qualla-----	0-7	10-20	---	5.6-7.3	0	0	0	0
	7-28	10-20	---	6.1-7.3	0	0	0	0
	28-38	10-20	---	6.1-7.3	0	0	0	0
	38-42	20-30	---	6.6-7.3	0	0	0	0
	42-60	20-30	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
838: Nosal-----	0-15	15-25	---	6.6-7.8	0	0	0	0
	15-26	15-25	---	6.6-7.8	0	0	0	0
	26-32	20-30	---	6.6-7.8	0	0	0	0
	32-44	20-30	---	6.6-7.3	0	0	0	0
	44-60	10-20	---	6.6-7.3	0	0	0	0
839: Vanderbilt-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-28	15-25	---	6.1-7.3	0	0	0	0
	28-38	20-30	---	6.6-7.3	0	0	0	0
	38-60	20-30	---	6.6-7.3	0	0	0	0
841: Metser-----	0-9	20-30	---	6.1-7.3	0	0	0	0
	9-15	30-45	---	6.6-7.3	0	0	0	0
	15-30	30-45	---	6.6-7.3	0	0	0	0
	30-37	30-45	---	6.6-7.3	0	0	0	0
	37-60	20-35	---	6.6-7.3	0	0	0	0
842: Durtash-----	0-5	10-20	---	6.1-7.8	0	0	0	0
	5-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
843: Reelow-----	0-2	20-30	---	6.1-7.3	0	0	0	0
	2-6	15-25	---	6.1-7.3	0	0	0	0
	6-14	45-55	---	6.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---	---
	18-56	---	---	---	---	---	---	---
	56-60	5.0-15	---	6.1-7.3	0	0	0	0
Reeser-----	0-6	20-30	---	6.1-7.3	0	0	0	0
	6-13	20-30	---	6.1-7.3	0	0	0	0
	13-22	45-55	---	6.1-7.3	0	0	0	0
	22-26	---	---	---	---	---	---	---
	26-58	---	---	---	---	---	---	---
	58-60	5.0-15	---	5.6-6.5	0	0	0	0
Sketter-----	0-6	15-25	---	6.1-7.3	0	0	0	0
	6-10	15-25	---	6.1-7.3	0	0	0	0
	10-21	25-35	---	6.1-7.3	0	0	0	0
	21-24	---	---	---	---	---	---	---
	24-55	---	---	---	---	---	---	---
	55-60	5.0-15	---	5.6-6.5	0	0	0	0
844: Metmill, very gravelly ashy loam--	0-6	15-25	---	6.1-7.3	0	0	0	0
	6-14	15-25	---	6.6-7.3	0	0	0	0
	14-22	20-30	---	6.6-7.3	0	0	0	0
	22-60	20-30	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
850: Reelow-----	0-2	20-30	---	6.1-7.3	0	0	0	0
	2-6	15-25	---	6.1-7.3	0	0	0	0
	6-14	45-55	---	6.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---	---
	18-56	---	---	---	---	---	---	---
	56-60	5.0-15	---	6.1-7.3	0	0	0	0
852: Durtash-----	0-7	10-20	---	6.1-7.8	0	0	0	0
	7-14	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	14-19	30-50	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	19-29	---	---	---	---	---	---	---
	29-60	---	---	---	---	---	---	---
853: Nint-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-13	20-30	---	6.6-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-38	20-30	---	6.6-7.3	0	0	0	0
	38-48	---	---	---	---	---	---	---
McDaniel-----	0-14	15-25	---	6.6-7.3	0	0	0	0
	14-19	15-25	---	6.6-7.3	0	0	0	0
	19-24	15-25	---	6.6-7.3	0	0	0	0
	24-32	15-25	---	6.6-7.3	0	0	0	0
	32-60	15-25	---	6.6-7.3	0	0	0	0
Rubble land-----	0-60	---	---	---	---	---	---	---
854: Shinn-----	0-2	10-20	---	6.1-7.3	0	0	0	0
	2-6	20-30	---	6.6-7.3	0	0	0	0
	6-9	20-30	---	6.6-7.3	0	0	0	0
	9-18	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Shushuskin-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-8	15-25	---	6.1-7.3	0	0	0	0
	8-13	15-25	---	6.1-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-23	20-30	---	6.6-7.3	0	0	0	0
	23-32	20-30	---	6.6-7.3	0	0	0	0
	32-42	---	---	---	---	---	---	---
855: Swauk-----	0-5	10-20	---	5.6-6.5	0	0	0	0
	5-18	20-30	---	6.1-6.5	0	0	0	0
	18-31	30-40	---	6.1-7.3	0	0	0	0
	31-60	20-30	---	6.1-7.3	0	0	0	0
Elkheights-----	0-8	10-20	---	5.6-7.3	0	0	0	0
	8-19	10-20	---	6.1-7.3	0	0	0	0
	19-41	10-20	---	6.1-7.3	0	0	0	0
	41-56	15-25	---	6.6-7.3	0	0	0	0
	56-60	15-25	---	6.1-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
855: Lablue-----	0-2	15-25	---	6.1-7.3	0	0	0	0
	2-5	20-30	---	6.1-7.3	0	0	0	0
	5-8	25-35	---	6.1-7.3	0	0	0	0
	8-11	---	---	---	---	---	---	---
	11-37	---	---	---	---	---	---	---
	37-60	10-20	---	6.6-7.8	0	0	0	0
858: Shinn-----	0-2	10-20	---	6.1-7.3	0	0	0	0
	2-6	20-30	---	6.6-7.3	0	0	0	0
	6-9	20-30	---	6.6-7.3	0	0	0	0
	9-18	---	---	---	---	---	---	---
Pachneum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.1-7.3	0	0	0	0
	18-26	20-30	---	6.6-7.3	0	0	0	0
	26-33	20-30	---	6.6-7.3	0	0	0	0
	33-47	20-30	---	6.6-7.3	0	0	0	0
	47-60	20-30	---	6.6-7.3	0	0	0	0
Nint-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-13	20-30	---	6.6-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-38	20-30	---	6.6-7.3	0	0	0	0
	38-48	---	---	---	---	---	---	---
860: Laufer-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-7	15-25	---	6.6-7.3	0	0	0	0
	7-10	20-30	---	6.6-7.8	0	0	0	0
	10-15	30-40	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Thiessen-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-9	25-30	---	6.6-7.8	0	0	0	0
	9-22	25-35	---	6.6-7.8	0	0	0	0
	22-32	---	---	---	---	---	---	---
862: Millhouse-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-14	15-25	---	6.1-7.3	0	0	0	0
	14-28	10-20	---	6.6-7.3	0	0	0	0
	28-60	5.0-15	---	6.6-7.3	0	0	0	0
864: Reelow-----	0-3	15-25	---	6.1-7.3	0	0	0	0
	3-6	15-25	---	6.1-7.3	0	0	0	0
	6-14	45-55	---	6.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---	---
	18-56	---	---	---	---	---	---	---
	56-60	5.0-15	---	6.1-7.3	0	0	0	0
868: Reelow-----	0-2	15-25	---	6.1-7.3	0	0	0	0
	2-6	15-25	---	6.1-7.3	0	0	0	0
	6-14	45-55	---	6.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---	---
	18-56	---	---	---	---	---	---	---
	56-60	5.0-15	---	6.1-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
868:								
Reeser-----	0-6	20-30	---	6.1-7.3	0	0	0	0
	6-13	20-30	---	6.1-7.3	0	0	0	0
	13-22	45-55	---	6.1-7.3	0	0	0	0
	22-26	---	---	---	---	---	---	---
	26-58	---	---	---	---	---	---	---
	58-60	5.0-15	---	5.6-6.5	0	0	0	0
Lablue-----	0-2	15-25	---	6.1-7.3	0	0	0	0
	2-5	20-30	---	6.1-7.3	0	0	0	0
	5-8	25-35	---	6.1-7.3	0	0	0	0
	8-11	---	---	---	---	---	---	---
	11-37	---	---	---	---	---	---	---
	37-60	10-20	---	6.6-7.8	0	0	0	0
869:								
Weirman, very gravelly sandy loam	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
Weirman, very cobbly sandy loam-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
870:								
Millhouse-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-14	15-25	---	6.1-7.3	0	0	0	0
	14-28	10-20	---	6.6-7.3	0	0	0	0
	28-60	5.0-15	---	6.6-7.3	0	0	0	0
Metser-----	0-9	20-30	---	6.1-7.3	0	0	0	0
	9-15	30-45	---	6.6-7.3	0	0	0	0
	15-30	30-45	---	6.6-7.3	0	0	0	0
	30-37	30-45	---	6.6-7.3	0	0	0	0
	37-60	20-35	---	6.6-7.3	0	0	0	0
871:								
Sketter-----	0-6	15-25	---	6.1-7.3	0	0	0	0
	6-10	15-25	---	6.1-7.3	0	0	0	0
	10-21	25-35	---	6.1-7.3	0	0	0	0
	21-24	---	---	---	---	---	---	---
	24-55	---	---	---	---	---	---	---
	55-60	5.0-15	---	5.6-6.5	0	0	0	0
Millhouse-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-14	15-25	---	6.1-7.3	0	0	0	0
	14-28	10-20	---	6.6-7.3	0	0	0	0
	28-60	5.0-15	---	6.6-7.3	0	0	0	0
Lablue-----	0-2	15-25	---	6.1-7.3	0	0	0	0
	2-5	20-30	---	6.1-7.3	0	0	0	0
	5-8	25-35	---	6.1-7.3	0	0	0	0
	8-11	---	---	---	---	---	---	---
	11-37	---	---	---	---	---	---	---
	37-60	10-20	---	6.6-7.8	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
872:								
Elkheights-----	0-8	10-20	---	5.6-7.3	0	0	0	0
	8-19	10-20	---	6.1-7.3	0	0	0	0
	19-41	10-20	---	6.1-7.3	0	0	0	0
	41-56	15-25	---	6.6-7.3	0	0	0	0
	56-60	15-25	---	6.1-7.3	0	0	0	0
Swauk-----	0-5	10-20	---	5.6-6.5	0	0	0	0
	5-18	20-30	---	6.1-6.5	0	0	0	0
	18-31	30-40	---	6.1-7.3	0	0	0	0
	31-60	20-30	---	6.1-7.3	0	0	0	0
873:								
Lablue-----	0-2	15-25	---	6.1-7.3	0	0	0	0
	2-5	20-30	---	6.1-7.3	0	0	0	0
	5-8	25-35	---	6.1-7.3	0	0	0	0
	8-11	---	---	---	---	---	---	---
	11-37	---	---	---	---	---	---	---
	37-60	10-20	---	6.6-7.8	0	0	0	0
Sketter-----	0-6	15-25	---	6.1-7.3	0	0	0	0
	6-10	15-25	---	6.1-7.3	0	0	0	0
	10-21	25-35	---	6.1-7.3	0	0	0	0
	21-24	---	---	---	---	---	---	---
	24-55	---	---	---	---	---	---	---
	55-60	5.0-15	---	5.6-6.5	0	0	0	0
Reelow-----	0-2	15-25	---	6.1-7.3	0	0	0	0
	2-6	15-25	---	6.1-7.3	0	0	0	0
	6-14	45-55	---	6.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---	---
	18-56	---	---	---	---	---	---	---
	56-60	5.0-15	---	6.1-7.3	0	0	0	0
875:								
Reeser-----	0-6	20-30	---	6.1-7.3	0	0	0	0
	6-13	20-30	---	6.1-7.3	0	0	0	0
	13-22	45-55	---	6.1-7.3	0	0	0	0
	22-26	---	---	---	---	---	---	---
	26-58	---	---	---	---	---	---	---
	58-60	5.0-15	---	5.6-6.5	0	0	0	0
Sketter-----	0-6	15-25	---	6.1-7.3	0	0	0	0
	6-10	15-25	---	6.1-7.3	0	0	0	0
	10-21	25-35	---	6.1-7.3	0	0	0	0
	21-24	---	---	---	---	---	---	---
	24-55	---	---	---	---	---	---	---
	55-60	5.0-15	---	5.6-6.5	0	0	0	0
Weirman-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
877:								
Maxhill-----	0-7	15-25	---	6.1-7.3	0	0	0	0
	7-13	15-25	---	6.1-7.3	0	0	0	0
	13-48	25-35	---	6.6-7.3	0	0	0	0
	48-60	5.0-15	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
878:								
Nint-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-13	20-30	---	6.6-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-38	20-30	---	6.6-7.3	0	0	0	0
	38-48	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
879:								
Patron, cobbly ashy silt loam-----	0-12	10-20	---	6.6-7.3	0	0	0	0
	12-35	25-35	---	6.6-7.8	0	0	0	0
	35-60	25-35	---	6.6-7.8	0	0	0	0
Patron-----	0-12	10-20	---	6.6-7.3	0	0	0	0
	12-35	25-35	---	6.6-7.8	0	0	0	0
	35-60	25-35	---	6.6-7.8	0	0	0	0
880:								
Elkheights-----	0-8	10-20	---	5.6-7.3	0	0	0	0
	8-19	10-20	---	6.1-7.3	0	0	0	0
	19-41	10-20	---	6.1-7.3	0	0	0	0
	41-56	15-25	---	6.6-7.3	0	0	0	0
	56-60	15-25	---	6.1-7.3	0	0	0	0
Qualla-----	0-7	10-20	---	5.6-7.3	0	0	0	0
	7-28	10-20	---	6.1-7.3	0	0	0	0
	28-38	10-20	---	6.1-7.3	0	0	0	0
	38-42	20-30	---	6.6-7.3	0	0	0	0
	42-60	20-30	---	6.6-7.3	0	0	0	0
882:								
Weirman, very gravelly sandy loam	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
Weirman, very cobbly sandy loam-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
Kayak-----	0-6	10-15	---	6.1-6.5	0	0	0	0
	6-17	10-20	---	6.6-7.8	0	0	0	0
	17-29	10-20	---	6.6-7.8	0	0	0	0
	29-39	10-20	---	6.6-7.8	0	0	0	0
	39-60	5.0-10	---	6.6-7.8	0	0	0	0
883:								
Nint-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-13	20-30	---	6.6-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-38	20-30	---	6.6-7.3	0	0	0	0
	38-48	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
883: McDaniel-----	0-14	15-25	---	6.6-7.3	0	0	0	0
	14-19	15-25	---	6.6-7.3	0	0	0	0
	19-24	15-25	---	6.6-7.3	0	0	0	0
	24-32	15-25	---	6.6-7.3	0	0	0	0
	32-60	15-25	---	6.6-7.3	0	0	0	0
Laufer-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-7	15-25	---	6.6-7.3	0	0	0	0
	7-10	20-30	---	6.6-7.8	0	0	0	0
	10-15	30-40	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
884: Maxhill-----	0-7	10-20	---	6.1-7.3	0	0	0	0
	7-13	15-25	---	6.1-7.3	0	0	0	0
	13-48	25-35	---	6.6-7.3	0	0	0	0
	48-60	5.0-15	---	6.6-7.3	0	0	0	0
885: Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
Ralock-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-14	10-20	---	6.6-7.8	0	0	0	0
	14-27	15-25	---	6.6-7.8	0	0	0	0
	27-36	15-25	---	7.4-8.4	15-35	0	0.0-2.0	0-1
	36-60	15-25	---	7.4-8.4	5-20	0	0.0-2.0	0-1
Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
886: Camaspach-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Whiskeydick-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	30-40	---	6.6-7.3	0	0	0	0
	10-27	30-45	---	6.6-7.8	0	0	0	0
	27-37	---	---	---	---	---	---	---
887: Lainand-----	0-6	10-20	---	6.1-7.3	0	0	0	0
	6-12	10-20	---	6.1-7.3	0	0	0	0
	12-20	10-20	---	6.1-7.3	0	0	0	0
	20-41	20-30	---	6.1-7.3	0	0	0	0
	41-60	15-30	---	6.1-7.3	0	0	0	0
Blint-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-18	15-25	---	6.6-7.3	0	0	0	0
	18-22	15-25	---	6.6-7.3	1-5	0	0	0
	22-32	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
887: Rubble land-----	0-60	---	---	---	---	---	---	---
889: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
890: Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
Tanksel-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
891: Tanksel-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-8	10-20	---	6.6-7.3	0	0	0	0
	8-17	10-20	---	6.6-7.3	0	0	0	0
	17-20	20-30	---	6.6-7.8	0	0	0	0
	20-28	25-40	---	7.4-7.8	0	0	0	0
	28-38	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
892: Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
893: Rubble land-----	0-60	---	---	---	---	---	---	---
Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
893: Rock outcrop-----	0-60	---	---	---	---	---	---	---
894: Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
Wipple-----	0-7	20-30	---	6.6-7.3	0	0	0	0
	7-11	35-50	---	6.6-7.8	0	0	0	0
	11-30	35-50	---	7.4-8.4	0	0	0.0-2.0	0
	30-50	25-50	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	50-60	---	---	---	---	---	---	---
896: Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
897: Nanum, flooded-----	0-8	15-25	---	6.1-7.8	0	0	0	0
	8-15	15-25	---	6.6-7.8	0	0	0	0
	15-28	20-30	---	6.6-7.8	0	0	0	0
	28-35	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
	35-60	20-30	---	6.6-8.4	0-5	0	0.0-2.0	0-2
898: Shinn-----	0-2	10-20	---	6.1-7.3	0	0	0	0
	2-6	20-30	---	6.6-7.3	0	0	0	0
	6-9	20-30	---	6.6-7.3	0	0	0	0
	9-18	---	---	---	---	---	---	---
Laufer-----	0-3	10-20	---	6.6-7.3	0	0	0	0
	3-7	15-25	---	6.6-7.3	0	0	0	0
	7-10	20-30	---	6.6-7.8	0	0	0	0
	10-15	30-40	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Nint-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-13	20-30	---	6.6-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-38	20-30	---	6.6-7.3	0	0	0	0
	38-48	---	---	---	---	---	---	---
899: Bedron-----	0-13	10-20	---	6.6-7.3	0	0	0	0
	13-19	25-35	---	6.6-7.3	0	0	0	0
	19-27	25-35	---	6.6-7.3	0	0	0	0
	27-60	25-35	---	6.6-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
899:								
Nint-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-13	20-30	---	6.6-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-38	20-30	---	6.6-7.3	0	0	0	0
	38-48	---	---	---	---	---	---	---
900:								
Deedale, flooded----	0-12	20-30	---	7.4-8.4	0	0	0.0-2.0	0-2
	12-25	30-40	---	7.4-8.4	0	0	0.0-2.0	0-2
	25-31	30-40	---	7.4-8.4	0	0	0.0-2.0	0-2
	31-54	30-40	---	7.4-8.4	0	0	0.0-2.0	0-2
	54-60	20-30	---	7.4-8.4	0	0	0.0-2.0	0-2
901:								
Niben-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-18	20-30	---	6.6-7.8	0	0	0	0
	18-26	25-35	---	6.6-7.8	0	0	0	0
	26-51	25-35	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	51-60	25-35	---	7.4-8.4	1-15	0	0.0-2.0	0-2
Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Benwy-----	0-10	10-20	---	6.1-7.8	0	0	0	0
	10-18	10-20	---	6.6-7.8	0	0	0	0
	18-33	10-20	---	7.4-7.8	0	0	0	0
	33-45	10-20	---	7.4-8.6	5-20	0	0.0-2.0	0-5
	45-55	---	---	---	---	---	---	---
902:								
Patron-----	0-12	10-20	---	6.6-7.3	0	0	0	0
	12-35	25-35	---	6.6-7.8	0	0	0	0
	35-60	25-35	---	6.6-7.8	0	0	0	0
Camaspatch-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-15	30-40	---	6.6-7.3	0	0	0	0
	15-25	---	---	---	---	---	---	---
903:								
Marlic-----	0-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	20-30	---	6.6-7.8	0	0	0	0
	15-18	20-30	---	6.6-7.8	0	0	0	0
	18-28	---	---	---	---	---	---	---
Zen-----	0-7	10-20	---	6.6-7.8	0	0	0	0
	7-12	10-20	---	6.6-7.8	0	0	0	0
	12-27	10-20	---	6.6-7.8	0	0	0	0
	27-30	10-20	---	7.4-8.6	5-15	0	0.0-2.0	0-2
	30-40	---	---	---	---	---	---	---
Laric-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-9	10-20	---	6.6-7.8	0	0	0	0
	9-19	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
905:								
Vantage-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-8	15-30	---	6.6-7.3	0	0	0	0
	8-18	25-50	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Niben-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-18	20-30	---	6.6-7.8	0	0	0	0
	18-26	25-35	---	6.6-7.8	0	0	0	0
	26-51	25-35	---	7.4-8.4	0-15	0	0.0-2.0	0-1
	51-60	25-35	---	7.4-8.4	1-15	0	0.0-2.0	0-2
Clerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-12	30-40	---	6.6-7.8	0	0	0	0
	12-24	30-40	---	6.6-7.8	0	0	0	0
	24-34	---	---	---	---	---	---	---
906:								
Levnik-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-8	20-30	---	6.6-7.8	0	0	0	0
	8-13	20-30	---	6.6-7.8	0	0	0	0
	13-16	30-40	---	6.6-7.8	1-3	0	0	0
	16-26	---	---	---	---	---	---	---
Nosser-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-10	20-30	---	6.6-7.8	0	0	0	0
	10-18	20-30	---	6.6-7.8	0	0	0	0
	18-22	20-30	---	7.4-8.4	2-5	0	0.0-2.0	0-1
	22-32	---	---	---	---	---	---	---
Nevo-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-8	15-25	---	6.6-7.8	0	0	0	0
	8-18	---	---	---	---	---	---	---
910:								
Winchester-----	0-9	5.0-10	---	6.6-7.8	0	0	0	0
	9-15	5.0-10	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0-2
Sagehill-----	0-6	10-15	---	6.6-7.8	0	0	0	0
	6-28	10-15	---	6.6-7.8	0	0	0	0
	28-45	10-15	---	7.4-7.8	0	0	0	0
	45-60	10-15	---	7.9-9.0	15-35	0	0.0-2.0	0-2
Burbank-----	0-5	10-15	---	7.4-7.8	0	0	0	0
	5-17	10-15	---	7.4-7.8	0	0	0	0
	17-60	5.0-10	---	7.4-8.4	1-5	0	0.0-2.0	0-1
911:								
Sagehill-----	0-6	10-15	---	6.6-7.8	0	0	0	0
	6-28	10-15	---	6.6-7.8	0	0	0	0
	28-45	10-15	---	7.4-7.8	0	0	0	0
	45-60	10-15	---	7.9-9.0	15-35	0	0.0-2.0	0-2
Burbank-----	0-5	10-15	---	7.4-7.8	0	0	0	0
	5-17	10-15	---	7.4-7.8	0	0	0	0
	17-60	5.0-10	---	7.4-8.4	1-5	0	0.0-2.0	0-1

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
911: Malaga-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-12	10-20	---	6.6-7.8	0	0	0	0
	12-19	10-20	---	6.6-7.8	0	0	0	0
	19-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0
914: Disage-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-18	25-40	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Clenage-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-16	20-30	---	6.6-7.8	0	0	0	0
	16-25	30-40	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	25-35	---	---	---	---	---	---	---
915: Nosser-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-10	20-30	---	6.6-7.8	0	0	0	0
	10-18	20-30	---	6.6-7.8	0	0	0	0
	18-22	20-30	---	7.4-8.4	2-5	0	0.0-2.0	0-1
	22-32	---	---	---	---	---	---	---
Levnik-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-8	20-30	---	6.6-7.8	0	0	0	0
	8-13	20-30	---	6.6-7.8	0	0	0	0
	13-16	30-40	---	6.6-7.8	1-3	0	0	0
	16-26	---	---	---	---	---	---	---
916: Nosser-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-10	20-30	---	6.6-7.8	0	0	0	0
	10-18	20-30	---	6.6-7.8	0	0	0	0
	18-22	20-30	---	7.4-8.4	2-5	0	0.0-2.0	0-1
	22-32	---	---	---	---	---	---	---
Levnik-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-8	20-30	---	6.6-7.8	0	0	0	0
	8-13	20-30	---	6.6-7.8	0	0	0	0
	13-16	30-40	---	6.6-7.8	1-3	0	0	0
	16-26	---	---	---	---	---	---	---
917: Nevo-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-8	15-25	---	6.6-7.8	0	0	0	0
	8-18	---	---	---	---	---	---	---
920: Esquatzel-----	0-10	10-20	---	6.6-7.8	0	0	0	0
	10-40	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	40-60	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
Aquolls-----	0-5	10-20	---	6.6-8.4	0	0	0.0-2.0	0-2
	5-12	10-20	---	6.6-8.4	0	0	0.0-2.0	0-2
	12-18	10-20	---	6.6-8.4	0	0	0.0-2.0	0-2
	18-60	5.0-10	---	6.6-8.4	0	0	0.0-2.0	0-2

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
920: Weirman-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
921: Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Nevo-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-8	15-25	---	6.6-7.8	0	0	0	0
	8-18	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---
922: Drino-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-7	10-20	---	6.6-7.8	0	0	0	0
	7-19	10-20	---	6.6-7.8	0-2	0	0	0
	19-38	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
	38-48	---	---	---	---	---	---	---
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
923: Timmerman-----	0-3	10-15	---	6.6-7.8	0	0	0	0
	3-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	7.4-9.0	1-15	0	0.0-2.0	0-2
Sagehill-----	0-6	10-15	---	6.6-7.8	0	0	0	0
	6-28	10-15	---	6.6-7.8	0	0	0	0
	28-45	10-15	---	7.4-7.8	0	0	0	0
	45-60	10-15	---	7.9-9.0	15-35	0	0.0-2.0	0-2
924: Malaga, stony sandy loam-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-12	10-20	---	6.6-7.8	0	0	0	0
	12-19	10-20	---	6.6-7.8	0	0	0	0
	19-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0
927: Disage-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-9	25-30	---	6.6-7.3	0	0	0	0
	9-18	25-40	---	6.6-7.3	0	0	0	0
	18-28	---	---	---	---	---	---	---
Sohappy-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-32	10-20	---	6.6-8.0	1-5	0	0	0
	32-43	10-20	---	7.9-9.0	5-20	0	0.0-2.0	0
	43-51	10-20	---	7.9-9.0	15-35	0	0.0-2.0	0
	51-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
927: Clenage-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-16	20-30	---	6.6-7.8	0	0	0	0
	16-25	30-40	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	25-35	---	---	---	---	---	---	---
928: Mozen-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-13	10-20	---	6.6-7.8	0	0	0	0
	13-22	20-30	---	6.6-7.8	0	0	0	0
	22-28	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	28-39	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	39-49	---	---	---	---	---	---	---
Argabak-----	0-2	10-20	---	6.6-7.8	0	0	0	0
	2-6	15-25	---	6.6-7.8	0	0	0	0
	6-16	---	---	---	---	---	---	---
Yrtneg-----	0-7	10-20	---	6.6-7.3	0	0	0	0
	7-10	10-20	---	6.6-7.3	0	0	0	0
	10-16	20-30	---	6.6-7.8	0	0	0	0
	16-19	20-30	---	6.6-7.8	0	0	0	0
	19-29	---	---	---	---	---	---	---
929: Neviot-----	0-6	10-20	---	6.6-7.3	0	0	0	0
	6-12	10-20	---	6.6-7.3	0	0	0	0
	12-22	10-20	---	6.6-7.8	0	0	0	0
	22-40	10-20	---	6.6-7.8	0	0	0	---
	40-49	10-20	---	7.4-8.4	0	0	0	0
	49-60	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-1
Palerf-----	0-9	10-20	---	6.6-7.3	0	0	0	0
	9-27	25-35	---	6.6-7.8	0	0	0	0
	27-35	25-45	---	7.4-8.4	15-25	0	0.0-2.0	0-1
	35-45	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
932: Volinger-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-39	20-30	---	6.6-7.8	0	0	0	0
	39-50	10-20	---	6.6-7.8	0	0	0	0
	50-58	10-30	---	6.6-7.8	0	0	0	0
	58-60	10-30	---	7.9-8.4	5-15	0	0.0-2.0	0-2
Mozen-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-13	10-20	---	6.6-7.8	0	0	0	0
	13-22	20-30	---	6.6-7.8	0	0	0	0
	22-28	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	28-39	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	39-49	---	---	---	---	---	---	---
933: Mozen-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-13	10-20	---	6.6-7.8	0	0	0	0
	13-22	20-30	---	6.6-7.8	0	0	0	0
	22-28	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	28-39	15-30	---	7.4-8.4	5-15	0	0.0-2.0	0-2
	39-49	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
933: Volinger-----	0-5	10-20	---	6.6-7.3	0	0	0	0
	5-17	10-20	---	6.6-7.3	0	0	0	0
	17-39	20-30	---	6.6-7.8	0	0	0	0
	39-50	10-20	---	6.6-7.8	0	0	0	0
	50-58	10-30	---	6.6-7.8	0	0	0	0
	58-60	10-30	---	7.9-8.4	5-15	0	0.0-2.0	0-2
Yrtneg-----	0-7	10-20	---	6.6-7.3	0	0	0	0
	7-10	10-20	---	6.6-7.3	0	0	0	0
	10-16	20-30	---	6.6-7.8	0	0	0	0
	16-19	20-30	---	6.6-7.8	0	0	0	0
	19-29	---	---	---	---	---	---	---
936: Shushuskin-----	0-4	15-25	---	6.1-7.3	0	0	0	0
	4-8	15-25	---	6.1-7.3	0	0	0	0
	8-13	15-25	---	6.1-7.3	0	0	0	0
	13-19	20-30	---	6.6-7.3	0	0	0	0
	19-23	20-30	---	6.6-7.3	0	0	0	0
	23-32	20-30	---	6.6-7.3	0	0	0	0
	32-42	---	---	---	---	---	---	---
Pachneum-----	0-8	15-25	---	6.1-7.3	0	0	0	0
	8-18	15-25	---	6.1-7.3	0	0	0	0
	18-26	20-30	---	6.6-7.3	0	0	0	0
	26-33	20-30	---	6.6-7.3	0	0	0	0
	33-47	20-30	---	6.6-7.3	0	0	0	0
	47-60	20-30	---	6.6-7.3	0	0	0	0
Shinn-----	0-2	10-20	---	6.1-7.3	0	0	0	0
	2-6	20-30	---	6.6-7.3	0	0	0	0
	6-9	20-30	---	6.6-7.3	0	0	0	0
	9-18	---	---	---	---	---	---	---
940: Renslow-----	0-11	10-20	---	6.6-7.8	0	0	0	0
	11-22	10-20	---	7.4-7.8	0	0	0	0
	22-36	10-20	---	7.4-8.4	0	0	0.0-1.0	0-1
	36-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2
941: Renslow-----	0-11	10-20	---	6.6-7.8	0	0	0	0
	11-22	10-20	---	7.4-7.8	0	0	0	0
	22-36	10-20	---	7.4-8.4	0	0	0.0-1.0	0-1
	36-60	10-20	---	7.9-9.0	5-15	0	0.0-2.0	0-2
944: Rubble land-----	0-60	---	---	---	---	---	---	---
Fortyday-----	0-3	10-20	---	6.6-7.8	0	0	0	0
	3-6	10-20	---	6.6-7.8	0	0	0	0
	6-15	10-20	---	6.6-7.8	0	0	0	0
	15-25	---	---	---	---	---	---	---
Rock outcrop-----	0-60	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
948:								
Hardmauk-----	0-1	---	20-30	4.5-5.5	0	---	0	0
	1-5	10-20	---	5.6-7.3	0	0	0	0
	5-11	10-20	---	5.6-6.5	0	0	0	0
	11-20	10-20	---	5.6-6.5	0	0	0	0
	20-38	15-30	---	5.6-6.5	0	0	0	0
	38-50	20-30	---	6.1-7.3	0	0	0	0
	50-60	20-30	---	6.1-7.3	0	0	0	0
Teanaway-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-7	10-20	---	5.6-7.3	0	0	0	0
	7-22	10-20	---	5.6-6.5	0	0	0	0
	22-42	10-20	---	5.6-6.5	0	0	0	0
	42-51	10-20	---	5.6-6.5	0	0	0	0
	51-60	15-25	---	6.1-7.3	0	0	0	0
954:								
Esquatzel-----	0-10	10-20	---	6.6-7.8	0	0	0	0
	10-40	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	40-60	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
955:								
Esquatzel-----	0-10	10-20	---	6.6-7.8	0	0	0	0
	10-40	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-1
	40-60	10-20	---	7.4-8.4	1-5	0	0.0-2.0	0-2
Weirman-----	0-5	10-20	---	6.6-7.8	0	0	0	0
	5-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
Weirman, very cobbly sandy loam-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
957:								
Kayak, rarely flooded	0-6	15-25	---	6.1-7.8	0	0	0	0
	6-17	10-20	---	6.6-7.8	0	0	0	0
	17-29	10-20	---	6.6-7.8	0	0	0	0
	29-39	10-20	---	6.6-7.8	0	0	0	0
	39-60	5.0-10	---	6.6-7.8	0	0	0	0
Weirman, rarely flooded-----	0-9	10-20	---	6.6-7.8	0	0	0	0
	9-15	10-15	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	6.6-7.8	0	0	0	0
958:								
Grinrod-----	0-4	10-20	---	6.6-7.3	0	0	0	0
	4-10	10-20	---	6.6-7.3	0	0	0	0
	10-27	20-30	---	6.6-7.3	0	0	0	0
	27-37	---	---	---	---	---	---	---
Horseflat-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-16	10-20	---	6.6-7.8	0	0	0	0
	16-26	---	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
960:								
Winchester-----	0-9	5.0-10	---	6.6-7.8	0	0	0	0
	9-15	5.0-10	---	6.6-7.8	0	0	0	0
	15-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0-2
Burbank-----	0-5	10-15	---	7.4-7.8	0	0	0	0
	5-17	10-15	---	7.4-7.8	0	0	0	0
	17-60	5.0-10	---	7.4-8.4	1-5	0	0.0-2.0	0-1
Malaga-----	0-4	10-20	---	6.6-7.8	0	0	0	0
	4-9	10-20	---	6.6-7.8	0	0	0	0
	9-12	10-20	---	6.6-7.8	0	0	0	0
	12-19	10-20	---	6.6-7.8	0	0	0	0
	19-60	5.0-10	---	7.4-8.4	0-5	0	0.0-2.0	0
963:								
Dumps, landfill-----	---	---	---	---	---	---	---	---
966:								
Ellisforde-----	0-6	10-20	---	6.6-7.8	0	0	0	0
	6-16	10-20	---	6.6-7.8	0	0	0	0
	16-28	10-20	---	7.4-8.4	0-5	0	0.0-2.0	0-1
	28-60	10-20	---	7.4-8.4	1-15	0	2.0-4.0	0-5
980:								
Rock Creek-----	0-2	10-20	---	6.1-7.3	0	0	0	0
	2-14	15-25	---	6.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---	---
981:								
Taneum-----	0-14	22-44	---	6.6-7.3	0	0	0	0
	14-43	0.0-0.0	---	6.6-7.3	0	0	0	0
	43-60	0.0-0.0	---	6.6-7.3	0	0	0	0
1006:								
Rock outcrop-----	0-60	---	---	---	---	---	---	---
Rubble land-----	0-60	---	---	---	---	---	---	---
Glaciers, icefields--	0-60	---	---	---	---	---	0	---
1007:								
Rock outcrop-----	0-60	---	---	---	---	---	---	---
Andic Humicryods----	0-2	---	20-30	4.5-5.5	0	---	0	0
	2-5	10-15	5.0-10	4.5-5.0	0	0	0	0
	5-11	40-65	15-25	4.5-5.0	0	0	0	0
	11-24	15-25	---	5.1-6.0	0	0	0	0
	24-37	10-20	---	5.1-6.0	0	0	0	0
	37-47	---	---	---	---	---	---	---
1441:								
Teanaway-----	0-3	---	20-30	4.5-5.5	0	---	0	0
	3-7	10-20	---	5.6-7.3	0	0	0	0
	7-22	10-20	---	5.6-6.5	0	0	0	0
	22-42	10-20	---	5.6-6.5	0	0	0	0
	42-51	10-20	---	5.6-6.5	0	0	0	0
	51-60	15-25	---	6.1-7.3	0	0	0	0

Soil Survey of Kittitas County Area, Washington

Table 10.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>In</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
6710:								
McDaniel-----	0-11	15-25	---	6.6-7.3	0	0	0	0
	11-19	15-25	---	6.6-7.3	0	0	0	0
	19-24	15-25	---	6.6-7.3	0	0	0	0
	24-32	15-25	---	6.6-7.3	0	0	0	0
	32-60	15-25	---	6.6-7.3	0	0	0	0
DAM:								
Dam-----	---	---	---	---	---	---	---	---
W:								
Water-----	---	---	---	---	---	---	---	---

Table 11.--Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of ponding and flooding apply to the whole year rather than to individual months. Absence of that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
2: Saydab-----	C/D	January	1.4-2.3	1.7-3.3	---	---	None	
		February	0.8-1.4	1.7-3.3	---	---	None	
		March	0.8-1.4	1.7-3.3	---	---	None	
		April	1.4-2.3	1.7-3.3	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
3: Naxing-----	B	Jan-Dec	---	---	---	---	None	
4: Naxing-----	B	Jan-Dec	---	---	---	---	None	
6: Ganis-----	D	Jan-Dec	---	---	---	---	None	
8: Sapkin-----	C	Jan-Dec	---	---	---	---	None	
9: Naxing-----	B	Jan-Dec	---	---	---	---	None	
10: Anatone-----	D	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
10Y: Bocker-----	D	Jan-Dec	---	---	---	---	None	
11: Sapkin-----	C	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
12: Sapkin-----	C	Jan-Dec	---	---	---	---	None	
13: Jumpe-----	B	Jan-Dec	---	---	---	---	None	
14: Jumpe-----	B	Jan-Dec	---	---	---	---	None	
15: Stemilt-----	C	Jan-Dec	---	---	---	---	None	
16: Stemilt-----	C	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
18: Loneridge-----	C	Jan-Dec	---	---	---	---	None	
19: Darland-----	B	Jan-Dec	---	---	---	---	None	
20: Darland, moist-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
24: Loneridge, north slopes---			<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
	C	Jan-Dec	---	---	---	---	---	None	
27: Tekison-----	C	Jan-Dec	---	---	---	---	---	None	
28: Odo-----	B	Jan-Dec	---	---	---	---	---	None	
29: Stemilt, warm-----	C	Jan-Dec	---	---	---	---	---	None	
30: Stemilt-----	C	Jan-Dec	---	---	---	---	---	None	
32: Stemilt-----	C	Jan-Dec	---	---	---	---	---	None	
33: Bocker-----	D	Jan-Dec	---	---	---	---	---	None	
Jumpe-----	B	Jan-Dec	---	---	---	---	---	None	
34: Bocker-----	D	Jan-Dec	---	---	---	---	---	None	
Sapkin-----	C	Jan-Dec	---	---	---	---	---	None	
35: Bocker-----	D	Jan-Dec	---	---	---	---	---	None	
Stemilt-----	C	Jan-Dec	---	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
40: Rubble land-----	---	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
41: Cliffdell-----	B	Jan-Dec	---	---	---	---	None	
42: Cliffdell-----	B	Jan-Dec	---	---	---	---	None	
48: Jumpe, north slopes-----	B	Jan-Dec	---	---	---	---	None	
49: Jumpe, south slopes-----	B	Jan-Dec	---	---	---	---	None	
50: Jumpe, south slopes-----	B	Jan-Dec	---	---	---	---	None	
51: Jumpe-----	B	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
52: Loneridge, north slopes---	C	Jan-Dec	---	---	---	---	None	
53: Loneridge, south slopes---	C	Jan-Dec	---	---	---	---	None	
53M: Tekison-----	C	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
54: Loneridge, south slopes-----	C	Jan-Dec	---	---	---	---	None		
54M: Tekison-----	C	Jan-Dec	---	---	---	---	None		
55: Shinn-----	D	Jan-Dec	---	---	---	---	None		
56: Shinn-----	D	Jan-Dec	---	---	---	---	None		
Nint-----	C	Jan-Dec	---	---	---	---	None		
Shushuskin-----	C	Jan-Dec	---	---	---	---	None		
57: Nard, sandstone substratum	C	January February March April May June July August September October November December	1.7-3.0 1.7-3.0 1.7-3.0 --- --- --- --- --- --- --- --- ---	2.1-3.3 2.1-3.3 2.1-3.3 --- --- --- --- --- --- --- --- ---	--- --- --- --- --- --- --- --- --- --- --- ---	None None None None None None None None None None None			
62: Pachneum-----	C	Jan-Dec	---	---	---	---	None		
64: Meystre-----	C	Jan-Dec	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
65: Meystre-----	C	Jan-Dec	---	---	---	---	None	
66: Jumpmore, south slopes, stony surface-----	B	Jan-Dec	---	---	---	---	None	
67: Jumpmore, north slopes----	B	Jan-Dec	---	---	---	---	None	
69: Stirrup-----	A	Jan-Dec	---	---	---	---	None	
70: McDaniel-----	C	Jan-Dec	---	---	---	---	None	
71: Kiper-----	A	Jan-Dec	---	---	---	---	None	
75: Yahne-----	C	Jan-Dec	---	---	---	---	None	
76: Yahne-----	C	Jan-Dec	---	---	---	---	None	
77: Ainsley-----	C	Jan-Dec	---	---	---	---	None	
78: Ainsley-----	C	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Frequency
			Upper limit	Lower limit	Surface water depth	Duration	
80: Cliffdell-----	B	Jan-Dec	---	---	---	---	None
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None
81: Terence-----	B	Jan-Dec	---	---	---	---	None
83: Terence-----	B	Jan-Dec	---	---	---	---	None
85: Spexarth-----	B	Jan-Dec	---	---	---	---	None
86: Osborn, south slopes-----	B	Jan-Dec	---	---	---	---	None
87: Osborn, north slopes-----	B	Jan-Dec	---	---	---	---	None
89: Cryaquepts-----	C/D	January February March April May June July August September October November December	2.3-5.0 1.2-2.3 0.6-1.2 0.2-0.6 0.0-0.2 0.2-0.6 0.6-1.2 1.2-2.3 2.3-5.0 2.3-5.0 2.3-5.0 2.3-5.0	>6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0	---	---	None None None None None None None None None None None None
90: Bertolotti, south slopes---	B	Jan-Dec	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
91: Bertolotti, north slopes--	B	Jan-Dec	---	---	---	---	None	
92: Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
Bertolotti-----	B	Jan-Dec	---	---	---	---	None	
93: Bertolotti-----	B	Jan-Dec	---	---	---	---	None	
96: Terence-----	B	Jan-Dec	---	---	---	---	None	
97: Stilgar-----	A	Jan-Dec	---	---	---	---	None	
101: Standup-----	A	Jan-Dec	---	---	---	---	None	
102: Standup, north slopes----	A	Jan-Dec	---	---	---	---	None	
104: Carrier-----	B	Jan-Dec	---	---	---	---	None	
105: Carrier-----	B	Jan-Dec	---	---	---	---	None	
106: Carrier-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
108: Jimek-----	B	Jan-Dec	---	---	---	---	None	
112: Natkim-----	A	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
115: Jimek-----	B	Jan-Dec	---	---	---	---	None	
123: Kaner-----	B	Jan-Dec	---	---	---	---	None	
125: Bearrun-----	C	Jan-Dec	---	---	---	---	None	
128: Kafing, north slopes-----	C	Jan-Dec	---	---	---	---	None	
129: Kafing, south slopes-----	C	Jan-Dec	---	---	---	---	None	
130: Brisky-----	D	Jan-Dec	---	---	---	---	None	
131: Kladnick, warm-----	A	Jan-Dec	---	---	---	---	None	
137: Dumps, mine-----	---	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
138: Pits, mine-----	---	Jan-Dec	---	---	---	---	None	
139: Nard-----	C/D	January	1.7-3.0	2.1-3.3	---	---	None	
		February	1.7-3.0	2.1-3.3	---	---	None	
		March	1.7-3.0	2.1-3.3	---	---	None	
		April	---	---	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
141: Nard-----	C/D	January	1.7-3.0	2.1-3.3	---	---	None	
		February	1.7-3.0	2.1-3.3	---	---	None	
		March	1.7-3.0	2.1-3.3	---	---	None	
		April	---	---	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
142: Scotties-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
144: Nard-----	C/D		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		January	1.7-3.0	2.1-3.3	---	---	None		
		February	1.7-3.0	2.1-3.3	---	---	None		
		March	1.7-3.0	2.1-3.3	---	---	None		
		April	---	---	---	---	None		
		May	---	---	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
146: Nard-----	C/D								
		January	1.7-3.0	2.1-3.3	---	---	None		
		February	1.7-3.0	2.1-3.3	---	---	None		
		March	1.7-3.0	2.1-3.3	---	---	None		
		April	---	---	---	---	None		
		May	---	---	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
158: Kiper-----	A								
		Jan-Dec	---	---	---	---	None		
159: Ampad, south slopes-----	B								
		Jan-Dec	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
160: Cumulic Haploxerolls-----	C		Ft	Ft	Ft				
		January	---	---	---	---	---	None	None
		February	---	---	---	---	---	None	None
		March	4.4-5.0	>6.0	---	---	---	None	None
		April	3.8-4.4	>6.0	---	---	---	None	None
		May	3.8-4.4	>6.0	---	---	---	None	None
		June	4.4-5.0	>6.0	---	---	---	None	None
		July	---	---	---	---	---	None	None
		August	---	---	---	---	---	None	None
		September	---	---	---	---	---	None	None
		October	---	---	---	---	---	None	None
		November	---	---	---	---	---	None	None
		December	---	---	---	---	---	None	None
161: Rock outcrop-----	---								
		Jan-Dec	---	---	---	---	---	None	None
162: Hakker-----	C								
		January	---	---	---	---	---	None	None
		February	1.7-2.5	3.3-5.0	---	---	---	None	None
		March	1.7-2.5	3.3-5.0	---	---	---	None	None
		April	1.7-2.5	3.3-5.0	---	---	---	None	None
		May	1.7-2.5	3.3-5.0	---	---	---	None	None
		June	---	---	---	---	---	None	None
		July	---	---	---	---	---	None	None
		August	---	---	---	---	---	None	None
		September	---	---	---	---	---	None	None
		October	---	---	---	---	---	None	None
		November	---	---	---	---	---	None	None
		December	---	---	---	---	---	None	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
163: Nard, north slopes-----	C/D		Ft	Ft	Ft				
		January	1.7-3.0	2.1-3.3	---	---		None	
		February	1.7-3.0	2.1-3.3	---	---		None	
		March	1.7-3.0	2.1-3.3	---	---		None	
		April	---	---	---	---		None	
		May	---	---	---	---		None	
		June	---	---	---	---		None	
		July	---	---	---	---		None	
		August	---	---	---	---		None	
		September	---	---	---	---		None	
		October	---	---	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
164: Nard-----	C/D								
		January	1.7-3.0	2.1-3.3	---	---		None	
		February	1.7-3.0	2.1-3.3	---	---		None	
		March	1.7-3.0	2.1-3.3	---	---		None	
		April	---	---	---	---		None	
		May	---	---	---	---		None	
		June	---	---	---	---		None	
		July	---	---	---	---		None	
		August	---	---	---	---		None	
		September	---	---	---	---		None	
		October	---	---	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
166: Ampad, warm-----	B								
		Jan-Dec	---	---	---	---		None	
167: Keechelus, south slopes---	C								
		Jan-Dec	---	---	---	---		None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
167: Nard-----			Ft	Ft	Ft			
	C/D	January		1.7-3.0 2.1-3.3	---	---	None	
		February		1.7-3.0 2.1-3.3	---	---	None	
		March		1.7-3.0 2.1-3.3	---	---	None	
		April		---	---	---	None	
		May		---	---	---	None	
		June		---	---	---	None	
		July		---	---	---	None	
		August		---	---	---	None	
		September		---	---	---	None	
		October		---	---	---	None	
		November		---	---	---	None	
		December		---	---	---	None	
Kafing, south slopes-----	C	Jan-Dec	---	---	---	---	None	
168: Keechelus, north slopes---	C	Jan-Dec	---	---	---	---	None	
Nard-----	C/D	January		1.7-3.0 2.1-3.3	---	---	None	
		February		1.7-3.0 2.1-3.3	---	---	None	
		March		1.7-3.0 2.1-3.3	---	---	None	
		April		---	---	---	None	
		May		---	---	---	None	
		June		---	---	---	None	
		July		---	---	---	None	
		August		---	---	---	None	
		September		---	---	---	None	
		October		---	---	---	None	
		November		---	---	---	None	
		December		---	---	---	None	
Kafing, north slopes-----	C	Jan-Dec	---	---	---	---	None	
170: Ampad-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Frequency
			Upper limit	Lower limit	Surface water depth	Duration	
175: Keechelus-----	C	Jan-Dec	---	---	---	---	None
176: Keechelus, south slopes---	C	Jan-Dec	---	---	---	---	None
177: Keechelus, north slopes---	C	Jan-Dec	---	---	---	---	None
180: Nimue-----	B	Jan-Dec	---	---	---	---	None
181: Nimue-----	B	Jan-Dec	---	---	---	---	None
182: Haywire-----	C	Jan-Dec	---	---	---	---	None
183: Haywire-----	C	Jan-Dec	---	---	---	---	None
185: Andic Dystrcryspts-----	B	Jan-Dec	---	---	---	---	None
186: Stirrup-----	A	Jan-Dec	---	---	---	---	None
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
187: Chinkmin-----	C		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>			
		January	1.5-3.0	1.7-3.3	---	---	None	
		February	1.5-3.0	1.7-3.3	---	---	None	
		March	1.5-3.0	1.7-3.3	---	---	None	
		April	1.5-3.0	1.7-3.3	---	---	None	
		May	1.5-3.0	1.7-3.3	---	---	None	
		June	1.5-3.0	1.7-3.3	---	---	None	
		July	1.5-3.0	1.7-3.3	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	1.5-3.0	1.7-3.3	---	---	None	
		December	1.5-3.0	1.7-3.3	---	---	None	
188: Chinkmin-----	C							
		January	1.5-3.0	1.7-3.3	---	---	None	
		February	1.5-3.0	1.7-3.3	---	---	None	
		March	1.5-3.0	1.7-3.3	---	---	None	
		April	1.5-3.0	1.7-3.3	---	---	None	
		May	1.5-3.0	1.7-3.3	---	---	None	
		June	1.5-3.0	1.7-3.3	---	---	None	
		July	1.5-3.0	1.7-3.3	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	1.5-3.0	1.7-3.3	---	---	None	
		December	1.5-3.0	1.7-3.3	---	---	None	
190: Nimue-----	B							
		Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---							
		Jan-Dec	---	---	---	---	None	
191: Sutkin-----	B							
		Jan-Dec	---	---	---	---	None	
194: Osborn-----	B							
		Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
194:			<i>Ft</i>	<i>Ft</i>	<i>Ft</i>			
Scotties-----	B	Jan-Dec	---	---	---	---	None	
Chapot-----	C	Jan-Dec	---	---	---	---	None	
195:								
Scotties-----	B	Jan-Dec	---	---	---	---	None	
Chapot-----	C	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
201:								
Roslyn-----	B	Jan-Dec	---	---	---	---	None	
203:								
Teanaway-----	C	January February March April May June July August September October November December	3.2-4.3 3.2-4.3 3.2-4.3 ---	3.3-5.0 3.3-5.0 3.3-5.0 ---	---	---	None None None None None None None None None None None None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
204: Teanaway-----			<i>Ft</i>	<i>Ft</i>	<i>Ft</i>			
	C	January	3.2-4.3	3.3-5.0	---	---	None	
		February	3.2-4.3	3.3-5.0	---	---	None	
		March	3.2-4.3	3.3-5.0	---	---	None	
		April	---	---	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
205: Xerofluvents-----	B	January	3.0	>6.0	---	---	None	
		February	3.0	>6.0	---	---	None	
		March	3.0	>6.0	---	---	None	
		April	3.0	>6.0	---	---	None	
		May	3.0	>6.0	---	---	None	
		June	3.0	>6.0	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
206: Dystroxerepts, south slopes-----	A	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
207: Quicksell-----	C/D		Ft	Ft	Ft			
		January	1.0-1.7	1.2-2.2	---	---	None	
		February	0.4-1.2	1.2-2.2	---	---	None	
		March	0.4-1.2	1.2-2.2	---	---	None	
		April	1.0-1.7	1.2-2.2	---	---	None	
		May	1.0-1.7	1.2-2.2	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
208: Patnish-----	C							
		January	2.9-5.0	>6.0	---	---	None	
		February	2.9-5.0	>6.0	---	---	None	
		March	2.9-5.0	>6.0	---	---	None	
		April	2.9-5.0	>6.0	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
Mippon-----	C							
		January	2.9-5.0	>6.0	---	---	None	
		February	2.9-5.0	>6.0	---	---	None	
		March	2.9-5.0	>6.0	---	---	None	
		April	2.9-5.0	>6.0	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
208: Myzel-----	C		Ft	Ft	Ft			
		January	2.9-5.0	>6.0	---	---	None	None
		February	2.9-5.0	>6.0	---	---	None	None
		March	2.9-5.0	>6.0	---	---	None	None
		April	2.9-5.0	>6.0	---	---	None	None
		May	3.2-4.8	>6.0	---	---	None	None
		June	3.2-4.8	>6.0	---	---	None	None
		July	4.8-5.0	>6.0	---	---	None	None
		August	4.8-5.0	>6.0	---	---	None	None
		September	4.8-5.0	>6.0	---	---	None	None
		October	4.8-5.0	>6.0	---	---	None	None
		November	---	---	---	---	None	None
		December	---	---	---	---	None	None
210: Dystroxerepts-----	B	Jan-Dec	---	---	---	---	None	
211: Teanaway-----	C							
		January	3.2-4.3	3.3-5.0	---	---	None	None
		February	3.2-4.3	3.3-5.0	---	---	None	None
		March	3.2-4.3	3.3-5.0	---	---	None	None
		April	---	---	---	---	None	None
		May	---	---	---	---	None	None
		June	---	---	---	---	None	None
		July	---	---	---	---	None	None
		August	---	---	---	---	None	None
		September	---	---	---	---	None	None
		October	---	---	---	---	None	None
		November	---	---	---	---	None	None
		December	---	---	---	---	None	None
213: Roslyn, moist-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
214: Haplosapristis-----			<i>Ft</i>	<i>Ft</i>	<i>Ft</i>			
	B/D	January	0.7-1.7	>6.0	---	---	None	
		February	0.7-1.7	>6.0	---	---	None	
		March	0.7-1.7	>6.0	---	---	None	
		April	0.0-0.7	>6.0	---	---	None	
		May	0.0-0.7	>6.0	---	---	None	
		June	0.0-0.7	>6.0	---	---	None	
		July	0.0-0.7	>6.0	---	---	None	
		August	0.7-1.7	>6.0	---	---	None	
		September	0.7-1.7	>6.0	---	---	None	
		October	0.7-1.7	>6.0	---	---	None	
		November	0.7-1.7	>6.0	---	---	None	
		December	0.7-1.7	>6.0	---	---	None	
216: Roxer-----	B	Jan-Dec	---	---	---	---	None	
217: Roxer-----	B	Jan-Dec	---	---	---	---	None	
218: Bograp-----	C	Jan-Dec	---	---	---	---	None	
220: Roxer, basalt substratum--	B	Jan-Dec	---	---	---	---	None	
Roxer-----	B	Jan-Dec	---	---	---	---	None	
222: Ampad, north slopes-----	B	Jan-Dec	---	---	---	---	None	
226: Bograp-----	C	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
227: Jummer	B	Jan-Dec	---	---	---	---	None	
Jumpmore	B	Jan-Dec	---	---	---	---	None	
Rock outcrop	---	Jan-Dec	---	---	---	---	None	
228: Natkim	A	Jan-Dec	---	---	---	---	None	
229: Natkim	A	Jan-Dec	---	---	---	---	None	
230: Rock outcrop	---	Jan-Dec	---	---	---	---	None	
Roxer	B	Jan-Dec	---	---	---	---	None	
232: Vabus	B/D	January February March April May June July August September October November December	---	1.5-2.9 1.7-3.3 1.5-2.9 1.7-3.3 1.5-2.9 1.7-3.3 ---	---	---	None None None None None None None None None None None None	
233: Natkim	A	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
234: Kladnick-----	A	Jan-Dec	---	---	---	---	None	
237: Kladnick-----	A	Jan-Dec	---	---	---	---	None	
238: Racker-----	A	Jan-Dec	---	---	---	---	None	
241: Thetis-----	A	Jan-Dec	---	---	---	---	None	
242: Roxer-----	B	Jan-Dec	---	---	---	---	None	
251: Domerie, stony surface---	A	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
252: Domerie, south slopes, stony surface-----	A	Jan-Dec	---	---	---	---	None	
253: Domerie, north slopes, stony surface-----	A	Jan-Dec	---	---	---	---	None	
254: Kachess-----	B	Jan-Dec	---	---	---	---	None	
255: Thetis-----	A	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
259: Fluvaquents-----	B/D		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		January	1.5-5.0	>6.0	---	---		None	
		February	1.5-5.0	>6.0	---	---		None	
		March	0.8-1.5	>6.0	---	---		None	
		April	0.8-1.5	>6.0	---	---		None	
		May	0.8-1.5	>6.0	---	---		None	
		June	0.8-1.5	>6.0	---	---		None	
		July	0.8-1.5	>6.0	---	---		None	
		August	1.5-5.0	>6.0	---	---		None	
		September	1.5-5.0	>6.0	---	---		None	
		October	1.5-5.0	>6.0	---	---		None	
		November	1.5-5.0	>6.0	---	---		None	
	December	1.5-5.0	>6.0	---	---		None		
262: Roslyn, clay loam subsoil	C	Jan-Dec	---	---	---	---		None	
263: Volperie-----	B	Jan-Dec	---	---	---	---		None	
264: Volperie-----	B	Jan-Dec	---	---	---	---		None	
265: Volperie, warm-----	B	Jan-Dec	---	---	---	---		None	
266: Volperie, north slopes----	B	Jan-Dec	---	---	---	---		None	
267: Esmeralda, moist-----	B	Jan-Dec	---	---	---	---		None	
268: Vitricryands-----	B	Jan-Dec	---	---	---	---		None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
270: Roxer-----	B	Jan-Dec	---	---	---	---	None	
Deroux-----	B	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
271: Roxer-----	B	Jan-Dec	---	---	---	---	None	
Deroux-----	B	Jan-Dec	---	---	---	---	None	
272: Andic Dystroxerepts-----	B	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
280: Esmeralda-----	B	Jan-Dec	---	---	---	---	None	
281: Vanepps-----	B	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
284: Esmeralda, bouldery surface-----	B	Jan-Dec	---	---	---	---	None	
290: Andic Dystrocryepts-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
290: Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	
301: Vabus-----	B/D	January	---	---	---	---	None	
		February	1.5-2.9	1.7-3.3	---	---	None	
		March	1.5-2.9	1.7-3.3	---	---	None	
		April	1.5-2.9	1.7-3.3	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
302: Vabus-----	B/D	January	---	---	---	---	None	
		February	1.5-2.9	1.7-3.3	---	---	None	
		March	1.5-2.9	1.7-3.3	---	---	None	
		April	1.5-2.9	1.7-3.3	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
304: Madrak-----	C							

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
306: Vabus-----	B/D		Ft	Ft	Ft			
		January	---	---	---	---	None	
		February	1.5-2.9	1.7-3.3	---	---	None	
		March	1.5-2.9	1.7-3.3	---	---	None	
		April	1.5-2.9	1.7-3.3	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
308: Vabus-----	B/D							
		January	---	---	---	---	None	
		February	1.5-2.9	1.7-3.3	---	---	None	
		March	1.5-2.9	1.7-3.3	---	---	None	
		April	1.5-2.9	1.7-3.3	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
309: Vabus-----	B/D							
		January	---	---	---	---	None	
		February	1.5-2.9	1.7-3.3	---	---	None	
		March	1.5-2.9	1.7-3.3	---	---	None	
		April	1.5-2.9	1.7-3.3	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Frequency
			Upper limit	Lower limit	Surface water depth	Duration	
313: Vabus-----	B/D		Ft	Ft	Ft		
		January	---	---	---	---	None
		February	1.5-2.9	1.7-3.3	---	---	None
		March	1.5-2.9	1.7-3.3	---	---	None
		April	1.5-2.9	1.7-3.3	---	---	None
		May	---	---	---	---	None
		June	---	---	---	---	None
		July	---	---	---	---	None
		August	---	---	---	---	None
		September	---	---	---	---	None
		October	---	---	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None
315: Lemah-----	A	Jan-Dec	---	---	---	---	None
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None
316: Cryorthents-----	A	Jan-Dec	---	---	---	---	None
317: Ronsele-----	A	Jan-Dec	---	---	---	---	None
318: Vabus-----	B/D						
		January	---	---	---	---	None
		February	1.5-2.9	1.7-3.3	---	---	None
		March	1.5-2.9	1.7-3.3	---	---	None
		April	1.5-2.9	1.7-3.3	---	---	None
		May	---	---	---	---	None
		June	---	---	---	---	None
		July	---	---	---	---	None
		August	---	---	---	---	None
		September	---	---	---	---	None
		October	---	---	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Frequency
			Upper limit	Lower limit	Surface water depth	Duration			
319: Vabus, south slopes-----	B/D		Ft	Ft	Ft				
		January	---	---	---	---		None	
		February	1.5-2.9	1.7-3.3	---	---		None	
		March	1.5-2.9	1.7-3.3	---	---		None	
		April	1.5-2.9	1.7-3.3	---	---		None	
		May	---	---	---	---		None	
		June	---	---	---	---		None	
		July	---	---	---	---		None	
		August	---	---	---	---		None	
		September	---	---	---	---		None	
		October	---	---	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
320: Vabus-----	B/D								
		January	---	---	---	---		None	
		February	1.5-2.9	1.7-3.3	---	---		None	
		March	1.5-2.9	1.7-3.3	---	---		None	
		April	1.5-2.9	1.7-3.3	---	---		None	
		May	---	---	---	---		None	
		June	---	---	---	---		None	
		July	---	---	---	---		None	
		August	---	---	---	---		None	
		September	---	---	---	---		None	
		October	---	---	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
Rock outcrop-----	---								
		Jan-Dec	---	---	---	---		None	
321: Andic Dystrocryepts, avalanche chute-----	A								
		Jan-Dec	---	---	---	---		None	
Andic Haplocryods-----	A								
		Jan-Dec	---	---	---	---		None	
Rock outcrop-----	---								
		Jan-Dec	---	---	---	---		None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
322: Vabus-----			<i>Ft</i>	<i>Ft</i>	<i>Ft</i>			
	B/D	January	---	---	---	---	None	
		February	1.5-2.9	1.7-3.3	---	---	None	
		March	1.5-2.9	1.7-3.3	---	---	None	
		April	1.5-2.9	1.7-3.3	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
323: Cryorthents, cool-----	B/D	January	1.4-5.0	>6.0	---	---	None	
		February	1.4-5.0	>6.0	---	---	None	
		March	1.4-5.0	>6.0	---	---	None	
		April	1.4-5.0	>6.0	---	---	None	
		May	1.4-5.0	>6.0	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	1.4-5.0	>6.0	---	---	None	
324: Ronselel-----	A							
		Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding	
			Upper limit	Lower limit	Surface water depth	Frequency
328: Cryofluvents-----	B		Ft	Ft	Ft	
		January	---	---	---	None
		February	---	---	---	None
		March	2.0-5.0	>6.0	---	None
		April	2.0-5.0	>6.0	---	None
		May	2.0-5.0	>6.0	---	None
		June	2.0-5.0	>6.0	---	None
		July	---	---	---	None
		August	---	---	---	None
		September	---	---	---	None
		October	---	---	---	None
		November	---	---	---	None
		December	---	---	---	None
Dystrocryepts-----	A		---	---	---	None
332: Stirrup-----	A	Jan-Dec	---	---	---	None
333: Stirrup-----	A	Jan-Dec	---	---	---	None
334: Stirrup-----	A	Jan-Dec	---	---	---	None
335: Vabus-----	B/D		---	---	---	None
		January	---	---	---	None
		February	1.5-2.9	1.7-3.3	---	None
		March	1.5-2.9	1.7-3.3	---	None
		April	1.5-2.9	1.7-3.3	---	None
		May	---	---	---	None
		June	---	---	---	None
		July	---	---	---	None
		August	---	---	---	None
		September	---	---	---	None
		October	---	---	---	None
		November	---	---	---	None
		December	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Frequency
			Upper limit	Lower limit	Surface water depth	Duration			
335: Rock outcrop-----	---		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		Jan-Dec	---	---	---	---			None
336: Ronsel-----	A	Jan-Dec	---	---	---	---			None
338: Gilpar-----	B	Jan-Dec	---	---	---	---			None
346: Gilpar-----	B	Jan-Dec	---	---	---	---			None
347: Gilpar-----	B	Jan-Dec	---	---	---	---			None
402: Esmeralda, bouldery surface-----	B	Jan-Dec	---	---	---	---			None
Rock outcrop-----	---	Jan-Dec	---	---	---	---			None
404: Polallie-----	B	Jan-Dec	---	---	---	---			None
Rock outcrop-----	---	Jan-Dec	---	---	---	---			None
405: Polallie-----	B	Jan-Dec	---	---	---	---			None
406: Polallie-----	B	Jan-Dec	---	---	---	---			None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Frequency
			Upper limit	Lower limit	Surface water depth	Duration			
408: Rock outcrop-----	---	Jan-Dec	---	---	---	---			None
Domerie-----	A	Jan-Dec	---	---	---	---			None
409: Domerie, warm-----	A	Jan-Dec	---	---	---	---			None
410: Tanaha-----	C	January February March April May June July August September October November December	---	---	---	---			None None None None None None None None None None None None
411: Argabak-----	D	Jan-Dec	---	---	---	---			None
414: Argabak-----	D	Jan-Dec	---	---	---	---			None
415: Benwy-----	B	Jan-Dec	---	---	---	---			None
417: Benwy-----	B	Jan-Dec	---	---	---	---			None
422: Cierf-----	D	Jan-Dec	---	---	---	---			None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
424: Cleman-----	A	Jan-Dec	---	---	---	Ft			
427: Clerf-----	D	Jan-Dec	---	---	---	---		None	
429: Grinrod-----	C	Jan-Dec	---	---	---	---		None	
Horseflat-----	D	Jan-Dec	---	---	---	---		None	
431: Grinrod-----	C	Jan-Dec	---	---	---	---		None	
Horseflat-----	D	Jan-Dec	---	---	---	---		None	
Rubble land-----	---	Jan-Dec	---	---	---	---		---	
433: Kiona-----	B	Jan-Dec	---	---	---	---		None	
Rubble land-----	---	Jan-Dec	---	---	---	---		None	
434: Laufer-----	D	Jan-Dec	---	---	---	---		None	
Thiessen-----	C	Jan-Dec	---	---	---	---		None	
438: Blint-----	C	Jan-Dec	---	---	---	---		None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
440: Nitzel-----	C		Ft	Ft	Ft			
		January	---	---	---	---	None	None
		February	---	---	---	---	None	None
		March	---	---	---	---	None	None
		April	3.8-5.0	>6.0	---	---	None	None
		May	2.4-3.8	>6.0	---	---	None	None
		June	2.4-3.8	>6.0	---	---	None	None
		July	2.4-3.8	>6.0	---	---	None	None
		August	2.4-3.8	>6.0	---	---	None	None
		September	3.8-5.0	>6.0	---	---	None	None
		October	---	---	---	---	None	None
		November	---	---	---	---	None	None
		December	---	---	---	---	None	None
450: Argixerolls, south slopes	C	Jan-Dec	---	---	---	---	None	None
Durixerolls, south slopes	C	Jan-Dec	---	---	---	---	None	None
452: Argabak-----	D							
		Jan-Dec	---	---	---	---	None	None
Zen-----	C	Jan-Dec	---	---	---	---	None	None
Grinrod-----	C	Jan-Dec	---	---	---	---	None	None
456: Cheviot-----	B	Jan-Dec	---	---	---	---	None	None
Rubble land-----	---	Jan-Dec	---	---	---	---	None	None
457: Cheviot-----	B	Jan-Dec	---	---	---	---	None	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
458: Clerf-----	D	Jan-Dec	---	---	---	---	None	
Vantage-----	D	Jan-Dec	---	---	---	---	None	
Cheviot-----	B	Jan-Dec	---	---	---	---	None	
460: Neviot-----	B	Jan-Dec	---	---	---	---	None	
Palerf-----	D	Jan-Dec	---	---	---	---	None	
Vantage-----	D	Jan-Dec	---	---	---	---	None	
461: Kiona-----	B	Jan-Dec	---	---	---	---	None	
465: Horseflat-----	D	Jan-Dec	---	---	---	---	None	
466: Benwy-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Frequency
			Upper limit	Lower limit	Surface water depth	Duration	
470: Weirman-----	A		Ft	Ft	Ft		
		January	---	---	---	---	None
		February	---	---	---	---	None
		March	---	---	---	---	None
		April	3.5-5.0	>6.0	---	---	None
		May	3.5-5.0	>6.0	---	---	None
		June	3.5-5.0	>6.0	---	---	None
		July	3.5-5.0	>6.0	---	---	None
		August	3.5-5.0	>6.0	---	---	None
		September	3.5-5.0	>6.0	---	---	None
		October	3.5-5.0	>6.0	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None
476: Ralock-----	C						
		Jan-Dec	---	---	---	---	None
Horseflat-----	D						
		Jan-Dec	---	---	---	---	None
480: Nanum-----	C/D						
		January	---	---	---	---	None
		February	---	---	---	---	None
		March	4.0-5.0	>6.0	---	---	None
		April	2.9-4.0	>6.0	---	---	None
		May	2.3-2.9	>6.0	---	---	None
		June	1.7-2.3	>6.0	---	---	None
		July	1.7-2.3	>6.0	---	---	None
		August	2.3-2.9	>6.0	---	---	None
		September	2.9-4.0	>6.0	---	---	None
		October	4.0-5.0	>6.0	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
481: Nanum-----	C/D	January	Ft	Ft	Ft				
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	4.0-5.0	>6.0	---	---		None	
		May	2.9-4.0	>6.0	---	---		None	
		June	2.3-2.9	>6.0	---	---		None	
		July	1.7-2.3	>6.0	---	---		None	
		August	1.7-2.3	>6.0	---	---		None	
		September	2.3-2.9	>6.0	---	---		None	
		October	2.9-4.0	>6.0	---	---		None	
		November	4.0-5.0	>6.0	---	---		None	
		December	---	---	---	---		None	
482: Rollinger-----	C	Jan-Dec	---	---	---	---		None	
485: Rollinger-----	C	Jan-Dec	---	---	---	---		None	
487: Rollinger-----	C	Jan-Dec	---	---	---	---		None	
489: Rollinger-----	C	Jan-Dec	---	---	---	---		None	
492: Rollinger-----	C	Jan-Dec	---	---	---	---		None	
493: Rollinger-----	C	Jan-Dec	---	---	---	---		None	
494: Caliralls-----	C	Jan-Dec	---	---	---	---		None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
495: Caliralls-----	C	Jan-Dec	---	---	---	---	---	None	
Clerf-----	D	Jan-Dec	---	---	---	---	---	None	
497: Canaspatch-----	D	Jan-Dec	---	---	---	---	---	None	
498: Caliralls-----	C	Jan-Dec	---	---	---	---	---	None	
Clerf-----	D	Jan-Dec	---	---	---	---	---	None	
500: Vantage-----	D	Jan-Dec	---	---	---	---	---	None	
502: Vantage-----	D	Jan-Dec	---	---	---	---	---	None	
503: Terlan-----	D	Jan-Dec	---	---	---	---	---	None	
Durtash-----	D	Jan-Dec	---	---	---	---	---	None	
Selah-----	C	Jan-Dec	---	---	---	---	---	None	
509: Vantage-----	D	Jan-Dec	---	---	---	---	---	None	
Clerf-----	D	Jan-Dec	---	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
511: Vantage-----	D	Jan-Dec	---	---	---	---	---	None	
Clerf-----	D	Jan-Dec	---	---	---	---	---	None	
512: Vantage-----	D	Jan-Dec	---	---	---	---	---	None	
Clerf-----	D	Jan-Dec	---	---	---	---	---	None	
513: Meloza-----	C	Jan-Dec	---	---	---	---	---	None	
Cowiche-----	B	Jan-Dec	---	---	---	---	---	None	
516: Selah-----	C	Jan-Dec	---	---	---	---	---	None	
517: Selah-----	C	Jan-Dec	---	---	---	---	---	None	
519: Selah-----	C	Jan-Dec	---	---	---	---	---	None	
523: Terlan-----	D	Jan-Dec	---	---	---	---	---	None	
524: Terlan-----	D	Jan-Dec	---	---	---	---	---	None	
525: Terlan-----	D	Jan-Dec	---	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Frequency
			Upper limit	Lower limit	Surface water depth	Duration	
532: Selah-----	C	Jan-Dec	---	---	---	---	None
Terlan-----	D	Jan-Dec	---	---	---	---	None
533: Selah-----	C	Jan-Dec	---	---	---	---	None
535: Zen-----	C	Jan-Dec	---	---	---	---	None
538: Zen-----	C	Jan-Dec	---	---	---	---	None
539: Zen-----	C	Jan-Dec	---	---	---	---	None
553: Ralock-----	C	Jan-Dec	---	---	---	---	None
554: Pachneum-----	C	Jan-Dec	---	---	---	---	None
557: Pachneum-----	C	Jan-Dec	---	---	---	---	None
558: Argixerolls, north slopes	C	Jan-Dec	---	---	---	---	None
Durixerolls, north slopes	C	Jan-Dec	---	---	---	---	None
561: Elkheights-----	B	Jan-Dec	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
563: Mendian-----	C	Jan-Dec	---	---	---	---	None		
570: Wipple-----	C	Jan-Dec	---	---	---	---	None		
571: Wipple-----	C	Jan-Dec	---	---	---	---	None		
580: Woldale-----	C/D	January February March April May June July August September October November December	---	---	---	---	None None None None None None None None None None None None		
584: Varodale-----	D	January February March April May June July August September October November December	---	---	---	---	None None None None None None None None None None None None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
585: Varodale-----	D		Ft	Ft	Ft			
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	3.7-5.0	>6.0	---	---	None	
		May	3.2-3.7	>6.0	---	---	None	
		June	3.2-3.7	>6.0	---	---	None	
		July	3.2-3.7	>6.0	---	---	None	
		August	3.2-3.7	>6.0	---	---	None	
		September	3.2-3.7	>6.0	---	---	None	
		October	3.7-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
586: Vanderbilt, moderately wet	C							
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	---	---	---	---	None	
		May	1.5-3.5	>6.0	---	---	None	
		June	1.5-3.5	>6.0	---	---	None	
		July	1.5-3.5	>6.0	---	---	None	
		August	1.5-3.5	>6.0	---	---	None	
		September	1.5-3.5	>6.0	---	---	None	
		October	1.5-3.5	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
587: Argixerolls-----	C							
		Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
589: Nack-----	C/D		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>			
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	3.2-5.0	>6.0	---	---	None	
		May	3.2-5.0	>6.0	---	---	None	
		June	1.2-3.2	>6.0	---	---	None	
		July	1.2-3.2	>6.0	---	---	None	
		August	1.2-3.2	>6.0	---	---	None	
		September	1.2-3.2	>6.0	---	---	None	
		October	3.2-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
Brickmill-----	C							
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	4.1-5.0	>6.0	---	---	None	
		May	3.2-4.1	>6.0	---	---	None	
		June	2.3-3.2	>6.0	---	---	None	
		July	2.3-3.2	>6.0	---	---	None	
		August	3.2-4.1	>6.0	---	---	None	
		September	4.1-5.0	>6.0	---	---	None	
		October	4.1-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
590: Brickmill-----	C							
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	4.1-5.0	>6.0	---	---	None	
		May	3.2-4.1	>6.0	---	---	None	
		June	2.3-3.2	>6.0	---	---	None	
		July	2.3-3.2	>6.0	---	---	None	
		August	3.2-4.1	>6.0	---	---	None	
		September	4.1-5.0	>6.0	---	---	None	
		October	4.1-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
590: Nanum-----	C/D	January	Ft	Ft	Ft				
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	4.0-5.0	>6.0	---	---		None	
		May	2.9-4.0	>6.0	---	---		None	
		June	2.3-2.9	>6.0	---	---		None	
		July	1.7-2.3	>6.0	---	---		None	
		August	1.7-2.3	>6.0	---	---		None	
		September	2.3-2.9	>6.0	---	---		None	
		October	2.9-4.0	>6.0	---	---		None	
		November	4.0-5.0	>6.0	---	---		None	
		December	---	---	---	---		None	
592: Umtanum-----	C	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---	---		None	
		May	4.0-5.0	>6.0	---	---		None	
		June	3.5-4.0	>6.0	---	---		None	
		July	3.5-4.0	>6.0	---	---		None	
		August	3.5-4.0	>6.0	---	---		None	
		September	3.5-4.0	>6.0	---	---		None	
		October	4.0-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
593: Camaspach-----	D	January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	---	---	---				

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
595: Camaspatch-----	D	Jan-Dec	---	---	---	---	None	
Whiskeydick-----	D	Jan-Dec	---	---	---	---	None	
598: Zillah-----	B/D	January	---	---	---	---	None	
		February	2.7-3.3	>6.0	---	---	None	
		March	1.2-2.7	>6.0	---	---	None	
		April	0.6-1.2	>6.0	---	---	None	
		May	0.4-0.6	>6.0	---	---	None	
		June	0.4-0.6	>6.0	---	---	None	
		July	0.6-1.2	>6.0	---	---	None	
		August	1.2-2.7	>6.0	---	---	None	
		September	2.7-3.3	>6.0	---	---	None	
		October	3.3-4.3	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
601: Brickmill-----	C	January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	4.1-5.0	>6.0	---	---	None	
		May	3.2-4.1	>6.0	---	---	None	
		June	2.3-3.2	>6.0	---	---	None	
		July	2.3-3.2	>6.0	---	---	None	
		August	3.2-4.1	>6.0	---	---	None	
		September	4.1-5.0	>6.0	---	---	None	
		October	4.1-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
602: Brickmill-----	C		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	4.1-5.0	>6.0	---	---		None	
		May	3.2-4.1	>6.0	---	---		None	
		June	2.3-3.2	>6.0	---	---		None	
		July	2.3-3.2	>6.0	---	---		None	
		August	3.2-4.1	>6.0	---	---		None	
		September	4.1-5.0	>6.0	---	---		None	
		October	4.1-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
603: Reeser-----	D								
		Jan-Dec	---	---	---	---		None	
604: Reeser-----	D								
		Jan-Dec	---	---	---	---		None	
605: Disage-----	D								
		Jan-Dec	---	---	---	---		None	
606: Disage-----	D								
		Jan-Dec	---	---	---	---		None	
607: Disage-----	D								
		Jan-Dec	---	---	---	---		None	
Clenage-----	D								
		Jan-Dec	---	---	---	---		None	
609: Ackna-----	B								
		Jan-Dec	---	---	---	---		None	
610: Ackna-----	B								
		Jan-Dec	---	---	---	---		None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
612: Nitcha-----	B	Jan-Dec	---	---	---	---	None		
614: Camaspach-----	D	Jan-Dec	---	---	---	---	None		
618: Nitzel, gravelly substratum-----	C	January February March April May June July August September October November December	---	---	---	---	None None None None None None None None None None None None		
621: Mitta, flooded-----	C	January February March April May June July August September October November December	---	---	---	---	None None None None None None None None None None None None		
622: Manastash-----	D	Jan-Dec	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency
623: Manastash-----	D	Jan-Dec	---	---	---	---	None
624: Manastash-----	D	Jan-Dec	---	---	---	---	None
625: Manastash-----	D	Jan-Dec	---	---	---	---	None
Durtash-----	D	Jan-Dec	---	---	---	---	None
626: Manastash-----	D	Jan-Dec	---	---	---	---	None
Selah-----	C	Jan-Dec	---	---	---	---	None
Durtash-----	D	Jan-Dec	---	---	---	---	None
632: Manastash-----	D	Jan-Dec	---	---	---	---	None
633: Nack-----	C/D	January February March April May June July August September October November December	---	---	---	---	None None None None None None None None None None None None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
634: Manastash-----	D	Jan-Dec	---	---	---	---	None		
Durtash-----	D	Jan-Dec	---	---	---	---	None		
635: Opnish-----	C	January February March April May June July August September October November December	---	---	---	---	None		
637: Tanksel-----	C	Jan-Dec	---	---	---	---	None		
Lainand-----	C	Jan-Dec	---	---	---	---	None		
638: Tanksel-----	C	Jan-Dec	---	---	---	---	None		
Lainand-----	C	Jan-Dec	---	---	---	---	None		
Camaspach-----	D	Jan-Dec	---	---	---	---	None		
640: Elkheights-----	B	Jan-Dec	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
644: Drino-----	C	Jan-Dec	---	---	---	Ft			
Sohappy-----	B	Jan-Dec	---	---	---			None	
Fortyday-----	D	Jan-Dec	---	---	---			None	
650: Tanksel-----	C	Jan-Dec	---	---	---			None	
Patron-----	C	Jan-Dec	---	---	---			None	
Camaspatch-----	D	Jan-Dec	---	---	---			None	
656: Tanksel-----	C	Jan-Dec	---	---	---			None	
Patron-----	C	Jan-Dec	---	---	---			None	
Camaspatch-----	D	Jan-Dec	---	---	---			None	
658: Camaspatch-----	D	Jan-Dec	---	---	---			None	
Tanksel-----	C	Jan-Dec	---	---	---			None	
Patron-----	---	Jan-Dec	---	---	---			---	
661: Drysel-----	C	Jan-Dec	---	---	---			None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
662: Ralock-----	C	Jan-Dec	---	---	---	---	None	
Palerf-----	D	Jan-Dec	---	---	---	---	None	
663: Ralock-----	C	Jan-Dec	---	---	---	---	None	
Palerf-----	D	Jan-Dec	---	---	---	---	None	
667: Laufer-----	D	Jan-Dec	---	---	---	---	None	
Thiessen-----	C	Jan-Dec	---	---	---	---	None	
668: Laufer-----	D	Jan-Dec	---	---	---	---	None	
Thiessen-----	C	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
669: Argabak-----	D	Jan-Dec	---	---	---	---	None	
Zen-----	C	Jan-Dec	---	---	---	---	None	
Grinrod-----	C	Jan-Dec	---	---	---	---	None	
670: Argabak-----	D	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Frequency
			Upper limit	Lower limit	Surface water depth	Duration	
670: Whiskeydick-----	D		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>		
		Jan-Dec	---	---	---	---	None
672: Argabak-----	D						
		Jan-Dec	---	---	---	---	None
Mozen-----	C						
		Jan-Dec	---	---	---	---	None
674: Durtash, gravelly-----	D						
		Jan-Dec	---	---	---	---	None
684: Nitzel-----	C						
		January	---	---	---	---	None
		February	---	---	---	---	None
		March	---	---	---	---	None
		April	3.8-5.0	>6.0	---	---	None
		May	2.4-3.8	>6.0	---	---	None
		June	2.4-3.8	>6.0	---	---	None
		July	2.4-3.8	>6.0	---	---	None
		August	2.4-3.8	>6.0	---	---	None
		September	3.8-5.0	>6.0	---	---	None
		October	---	---	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None
Weirman-----	A						
		January	---	---	---	---	None
		February	---	---	---	---	None
		March	---	---	---	---	None
		April	3.5-5.0	>6.0	---	---	None
		May	3.5-5.0	>6.0	---	---	None
		June	3.5-5.0	>6.0	---	---	None
		July	3.5-5.0	>6.0	---	---	None
		August	3.5-5.0	>6.0	---	---	None
		September	3.5-5.0	>6.0	---	---	None
		October	3.5-5.0	>6.0	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
693: Tanksel-----	C	Jan-Dec	---	---	---	---	None	
Wockum-----	C	Jan-Dec	---	---	---	---	None	
695: Drino-----	C	Jan-Dec	---	---	---	---	None	
Sohappy-----	B	Jan-Dec	---	---	---	---	None	
Fortyday-----	D	Jan-Dec	---	---	---	---	None	
697: Wockum-----	C	Jan-Dec	---	---	---	---	None	
Blint-----	C	Jan-Dec	---	---	---	---	None	
698: Wockum-----	C	Jan-Dec	---	---	---	---	None	
Blint-----	C	Jan-Dec	---	---	---	---	None	
Windry-----	D	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
706: Kayak-----	B/D		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>			
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	3.2-5.0	>6.0	---	---	None	
		May	2.4-3.2	>6.0	---	---	None	
		June	1.4-2.4	>6.0	---	---	None	
		July	1.4-2.4	>6.0	---	---	None	
		August	2.4-3.2	>6.0	---	---	None	
		September	3.2-5.0	>6.0	---	---	None	
		October	3.2-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
712: Malaga-----	B	Jan-Dec	---	---	---	---	None	
713: Malaga-----	B	Jan-Dec	---	---	---	---	None	
715: Weirman-----	A							
		January	3.5-5.0	>6.0	---	---	None	
		February	3.5-5.0	>6.0	---	---	None	
		March	3.5-5.0	>6.0	---	---	None	
		April	3.5-5.0	>6.0	---	---	None	
		May	3.5-5.0	>6.0	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
717: Fortyday-----	D	Jan-Dec	---	---	---	---	None	
Drino-----	C	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
717: Nevo-----	D	Jan-Dec	---	---	---	---	None	
718: Fortyday-----	D	Jan-Dec	---	---	---	---	None	
Drino-----	C	Jan-Dec	---	---	---	---	None	
Nevo-----	D	Jan-Dec	---	---	---	---	None	
720: Nanum-----	C/D	January February March April May June July August September October November December	---	---	---	---	None None None None None None None None None None None None	
724: Manastash-----	D	Jan-Dec	---	---	---	---	None	
Durtash-----	D	Jan-Dec	---	---	---	---	None	
725: Argabak-----	D	Jan-Dec	---	---	---	---	None	
Vantage-----	D	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
741: Vantage-----	D	Jan-Dec	---	---	---	---	None	
Vantage-----	D	Jan-Dec	---	---	---	---	None	
742: Drino-----	C	Jan-Dec	---	---	---	---	None	
Fortyday-----	D	Jan-Dec	---	---	---	---	None	
744: Palerf-----	D	Jan-Dec	---	---	---	---	None	
Vantage-----	D	Jan-Dec	---	---	---	---	None	
745: Zen-----	C	Jan-Dec	---	---	---	---	None	
Benwy-----	B	Jan-Dec	---	---	---	---	None	
Laric-----	D	Jan-Dec	---	---	---	---	None	
747: Palerf-----	D	Jan-Dec	---	---	---	---	None	
Ralock-----	C	Jan-Dec	---	---	---	---	None	
Vantage-----	D	Jan-Dec	---	---	---	---	None	
748: Malaga-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
751: Vantage-----	D	Jan-Dec	---	---	---	---	None	
Clerf-----	D	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
755: Nevo-----	D	Jan-Dec	---	---	---	---	None	
Fortyday-----	D	Jan-Dec	---	---	---	---	None	
758: Schappy-----	B	Jan-Dec	---	---	---	---	None	
Fortyday-----	D	Jan-Dec	---	---	---	---	None	
772: Haploxerolls-----	B	Jan-Dec	---	---	---	---	None	
Weirman-----	A	January February March April May June July August September October November December	3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 --- 					

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
772: Agualls-----	B/D		Ft	Ft	Ft				
		January	1.5-5.0	>6.0	---			None	
		February	1.0-1.5	>6.0	---			None	
		March	0.4-1.0	>6.0	---			None	
		April	0.0-0.4	>6.0	---			None	
		May	0.0-0.4	>6.0	---			None	
		June	0.0-0.4	>6.0	---			None	
		July	0.4-1.0	>6.0	---			None	
		August	1.0-1.5	>6.0	---			None	
		September	1.5-5.0	>6.0	---			None	
		October	1.5-5.0	>6.0	---			None	
		November	1.5-5.0	>6.0	---			None	
		December	1.5-5.0	>6.0	---			None	
774: Drino-----	C								
		Jan-Dec	---	---	---			None	
Rubble land-----	---								
		Jan-Dec	---	---	---			None	
Rock outcrop-----	---								
		Jan-Dec	---	---	---			None	
787: Terlan-----	D								
		Jan-Dec	---	---	---			None	
Durtash-----	D								
		Jan-Dec	---	---	---			None	
Selah-----	C								
		Jan-Dec	---	---	---			None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
789: Deedale-----	D		Ft	Ft	Ft				
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	2.6-3.0	>6.0	---	---	None		
		April	2.1-2.6	>6.0	---	---	None		
		May	1.6-2.1	>6.0	---	---	None		
		June	1.0-1.6	>6.0	---	---	None		
		July	1.0-1.6	>6.0	---	---	None		
		August	1.6-2.1	>6.0	---	---	None		
		September	2.1-2.6	>6.0	---	---	None		
		October	2.6-3.0	>6.0	---	---	None		
		November	3.0-4.5	>6.0	---	---	None		
		December	---	---	---	---	None		
790: Mitta-----	C								
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	---	---	---	---	None		
		April	---	---	---	---	None		
		May	4.1-5.0	>6.0	---	---	None		
		June	2.8-4.1	>6.0	---	---	None		
		July	2.8-4.1	>6.0	---	---	None		
		August	2.8-4.1	>6.0	---	---	None		
		September	2.8-4.1	>6.0	---	---	None		
		October	4.1-5.0	>6.0	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
791: Mitta, drained-----	C								
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	---	---	---	---	None		
		April	---	---	---	---	None		
		May	4.1-5.0	>6.0	---	---	None		
		June	2.8-4.1	>6.0	---	---	None		
		July	2.8-4.1	>6.0	---	---	None		
		August	2.8-4.1	>6.0	---	---	None		
		September	2.8-4.1	>6.0	---	---	None		
		October	4.1-5.0	>6.0	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Frequency
			Upper limit	Lower limit	Surface water depth	Duration			
792: Brickmill-----	C		Ft	Ft	Ft				
		January	---	---	---	---			None
		February	---	---	---	---			None
		March	---	---	---	---			None
		April	4.1-5.0	>6.0	---	---			None
		May	3.2-4.1	>6.0	---	---			None
		June	2.3-3.2	>6.0	---	---			None
		July	2.3-3.2	>6.0	---	---			None
		August	3.2-4.1	>6.0	---	---			None
		September	4.1-5.0	>6.0	---	---			None
		October	4.1-5.0	>6.0	---	---			None
		November	---	---	---	---			None
		December	---	---	---	---			None
793: Zillah-----	B/D								
		January	---	---	---	---			None
		February	2.7-3.3	>6.0	---	---			None
		March	1.2-2.7	>6.0	---	---			None
		April	0.6-1.2	>6.0	---	---			None
		May	0.4-0.6	>6.0	---	---			None
		June	0.4-0.6	>6.0	---	---			None
		July	0.6-1.2	>6.0	---	---			None
		August	1.2-2.7	>6.0	---	---			None
		September	2.7-3.3	>6.0	---	---			None
		October	3.3-4.3	>6.0	---	---			None
		November	---	---	---	---			None
		December	---	---	---	---			None
Kayak-----	B/D								
		January	---	---	---	---			None
		February	---	---	---	---			None
		March	---	---	---	---			None
		April	3.2-5.0	>6.0	---	---			None
		May	2.4-3.2	>6.0	---	---			None
		June	1.4-2.4	>6.0	---	---			None
		July	1.4-2.4	>6.0	---	---			None
		August	2.4-3.2	>6.0	---	---			None
		September	3.2-5.0	>6.0	---	---			None
		October	3.2-5.0	>6.0	---	---			None
		November	---	---	---	---			None
		December	---	---	---	---			None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
794: Kayak-----	B/D		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	---	---	---	---	None		
		April	3.2-5.0	>6.0	---	---	None		
		May	2.4-3.2	>6.0	---	---	None		
		June	1.4-2.4	>6.0	---	---	None		
		July	1.4-2.4	>6.0	---	---	None		
		August	2.4-3.2	>6.0	---	---	None		
		September	3.2-5.0	>6.0	---	---	None		
		October	3.2-5.0	>6.0	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
795: Nack-----	C/D								
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	---	---	---	---	None		
		April	3.2-5.0	>6.0	---	---	None		
		May	3.2-5.0	>6.0	---	---	None		
		June	1.2-3.2	>6.0	---	---	None		
		July	1.2-3.2	>6.0	---	---	None		
		August	1.2-3.2	>6.0	---	---	None		
		September	1.2-3.2	>6.0	---	---	None		
		October	3.2-5.0	>6.0	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
Weirman-----	A								
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	---	---	---	---	None		
		April	3.5-5.0	>6.0	---	---	None		
		May	3.5-5.0	>6.0	---	---	None		
		June	3.5-5.0	>6.0	---	---	None		
		July	3.5-5.0	>6.0	---	---	None		
		August	3.5-5.0	>6.0	---	---	None		
		September	3.5-5.0	>6.0	---	---	None		
		October	3.5-5.0	>6.0	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
795: Opnish-----	C		Ft	Ft	Ft			
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	---	---	---	---	None	
		May	2.0-3.3	>6.0	---	---	None	
		June	2.0-3.3	>6.0	---	---	None	
		July	2.0-3.3	>6.0	---	---	None	
		August	2.0-3.3	>6.0	---	---	None	
		September	2.0-3.3	>6.0	---	---	None	
		October	2.0-3.3	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
796: Brickmill-----	C							
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	4.1-5.0	>6.0	---	---	None	
		May	3.2-4.1	>6.0	---	---	None	
		June	2.3-3.2	>6.0	---	---	None	
		July	2.3-3.2	>6.0	---	---	None	
		August	3.2-4.1	>6.0	---	---	None	
		September	4.1-5.0	>6.0	---	---	None	
		October	4.1-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
Nack-----	C/D							
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	3.2-5.0	>6.0	---	---	None	
		May	3.2-5.0	>6.0	---	---	None	
		June	1.2-3.2	>6.0	---	---	None	
		July	1.2-3.2	>6.0	---	---	None	
		August	1.2-3.2	>6.0	---	---	None	
		September	1.2-3.2	>6.0	---	---	None	
		October	3.2-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
797: Brysill-----	C	Jan-Dec	---	---	---	---	None	
799: Brysill-----	C	Jan-Dec	---	---	---	---	None	
800: Brysill-----	C	Jan-Dec	---	---	---	---	None	
801: Brysill-----	C	Jan-Dec	---	---	---	---	None	
802: Brysill-----	C	Jan-Dec	---	---	---	---	None	
803: Brysill-----	C	Jan-Dec	---	---	---	---	None	
804: Benwy-----	B	Jan-Dec	---	---	---	---	None	
806: Weirman, very gravelly sandy loam-----	A	January February March April May June July August September October November December	3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 ---	>6.0 >6.0 >6.0 >6.0 >6.0 ---	---	---	None None None None None None None None None None None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
806: Weirman, very cobbly sandy loam-----	A		Ft	Ft	Ft			
		January	3.5-5.0	>6.0	---	---	None	
		February	3.5-5.0	>6.0	---	---	None	
		March	3.5-5.0	>6.0	---	---	None	
		April	3.5-5.0	>6.0	---	---	None	
		May	3.5-5.0	>6.0	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
807: Brysill-----	C							
		Jan-Dec	---	---	---	---	None	
Ackna-----	B							
		Jan-Dec	---	---	---	---	None	
809: Weirman-----	A							
		January	3.5-5.0	>6.0	---	---	None	
		February	3.5-5.0	>6.0	---	---	None	
		March	3.5-5.0	>6.0	---	---	None	
		April	3.5-5.0	>6.0	---	---	None	
		May	3.5-5.0	>6.0	---	---	None	
		June	3.5-5.0	>6.0	---	---	None	
		July	3.5-5.0	>6.0	---	---	None	
		August	3.5-5.0	>6.0	---	---	None	
		September	3.5-5.0	>6.0	---	---	None	
		October	3.5-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
809: Kayak-----	B/D		Ft	Ft	Ft			
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	3.2-5.0	>6.0	---	---	None	
		May	2.4-3.2	>6.0	---	---	None	
		June	1.4-2.4	>6.0	---	---	None	
		July	1.4-2.4	>6.0	---	---	None	
		August	2.4-3.2	>6.0	---	---	None	
		September	3.2-5.0	>6.0	---	---	None	
		October	3.2-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
810: Zillah-----	B/D							
		January	---	---	---	---	None	
		February	2.7-3.3	>6.0	---	---	None	
		March	1.2-2.7	>6.0	---	---	None	
		April	0.6-1.2	>6.0	---	---	None	
		May	0.4-0.6	>6.0	---	---	None	
		June	0.4-0.6	>6.0	---	---	None	
		July	0.6-1.2	>6.0	---	---	None	
		August	1.2-2.7	>6.0	---	---	None	
		September	2.7-3.3	>6.0	---	---	None	
		October	3.3-4.3	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
814: Argixerolls, moist, north slopes-----	C	Jan-Dec	---	---	---	---	None	
815: Argixerolls, moist, south slopes-----	C	Jan-Dec	---	---	---	---	None	
816: Patron-----	C	Jan-Dec	---	---	---	---	None	
817: Patron-----	C	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Frequency
			Upper limit	Lower limit	Surface water depth	Duration	
817: Manastash-----	D	Jan-Dec	---	---	---	---	None
818: Untanum-----	C	January	---	---	---	---	None
		February	---	---	---	---	None
		March	---	---	---	---	None
		April	4.0-5.0	>6.0	---	---	None
		May	3.5-4.0	>6.0	---	---	None
		June	3.5-4.0	>6.0	---	---	None
		July	3.5-4.0	>6.0	---	---	None
		August	3.5-4.0	>6.0	---	---	None
		September	3.5-4.0	>6.0	---	---	None
		October	4.0-5.0	>6.0	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None
819: Millhouse-----	B	Jan-Dec	---	---	---	---	None
820: Modsel, ashy loam-----	D	January	---	---	---	---	None
		February	---	---	---	---	None
		March	---	---	---	---	None
		April	4.7-5.0	>6.0	---	---	None
		May	3.1-4.7	>6.0	---	---	None
		June	3.1-4.7	>6.0	---	---	None
		July	3.1-4.7	>6.0	---	---	None
		August	3.1-4.7	>6.0	---	---	None
		September	3.1-4.7	>6.0	---	---	None
		October	4.7-5.0	>6.0	---	---	None
		November	---	---	---	---	None
		December	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
820: Modsel, cobbly ashy loam--	D		Ft	Ft	Ft				
		January	---	---	---	---		None	
		February	---	---	---	---		None	
		March	---	---	---	---		None	
		April	4.7-5.0	>6.0	---	---		None	
		May	3.1-4.7	>6.0	---	---		None	
		June	3.1-4.7	>6.0	---	---		None	
		July	3.1-4.7	>6.0	---	---		None	
		August	3.1-4.7	>6.0	---	---		None	
		September	3.1-4.7	>6.0	---	---		None	
		October	4.7-5.0	>6.0	---	---		None	
		November	---	---	---	---		None	
		December	---	---	---	---		None	
822: Reeser-----	D	Jan-Dec	---	---	---	---		None	
Reelow-----	D	Jan-Dec	---	---	---	---		None	
Sketter-----	C	Jan-Dec	---	---	---	---		None	
823: Millhouse-----	B	Jan-Dec	---	---	---	---		None	
824: Pachneum-----	C	Jan-Dec	---	---	---	---		None	
825: Pachneum-----	C	Jan-Dec	---	---	---	---		None	
828: Swauk-----	D	Jan-Dec	---	---	---	---		None	
829: Swauk-----	D	Jan-Dec	---	---	---	---		None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
830:			<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
Swauk-----	D	Jan-Dec	---	---	---	---	None		
Qualla-----	C	January	---	---	---	---	None		
		February	2.3-2.8	2.5-3.3	---	---	None		
		March	2.3-2.8	2.5-3.3	---	---	None		
		April	2.3-2.8	2.5-3.3	---	---	None		
		May	2.3-2.8	2.5-3.3	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
831:									
Qualla-----	C	January	---	---	---	---	None		
		February	2.3-2.8	2.5-3.3	---	---	None		
		March	2.3-2.8	2.5-3.3	---	---	None		
		April	2.3-2.8	2.5-3.3	---	---	None		
		May	2.3-2.8	2.5-3.3	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
832: Qualla-----	C		Ft	Ft	Ft				
		January	---	---	---	---	None		
		February	2.3-2.8	2.5-3.3	---	---	None		
		March	2.3-2.8	2.5-3.3	---	---	None		
		April	2.3-2.8	2.5-3.3	---	---	None		
		May	2.3-2.8	2.5-3.3	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
833: Swauk-----	D								
835: Swauk-----	D								
		Jan-Dec	---	---	---	---	None		
Qualla-----	C								
		January	---	---	---	---	None		
		February	2.3-2.8	2.5-3.3	---	---	None		
		March	2.3-2.8	2.5-3.3	---	---	None		
		April	2.3-2.8	2.5-3.3	---	---	None		
		May	2.3-2.8	2.5-3.3	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
838: Nosal-----	C/D		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	3.7-5.0	>6.0	---	---	None		
		April	2.7-3.7	>6.0	---	---	None		
		May	2.2-2.7	>6.0	---	---	None		
		June	1.6-2.2	>6.0	---	---	None		
		July	1.6-2.2	>6.0	---	---	None		
		August	2.2-2.7	>6.0	---	---	None		
		September	2.7-3.7	>6.0	---	---	None		
		October	3.7-5.0	>6.0	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
839: Vanderbilt-----	C								
		Jan-Dec	---	---	---	---	None		
841: Metser-----	D								
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	---	---	---	---	None		
		April	---	---	---	---	None		
		May	3.1-5.0	>6.0	---	---	None		
		June	3.1-5.0	>6.0	---	---	None		
		July	2.5-3.1	>6.0	---	---	None		
		August	2.5-3.1	>6.0	---	---	None		
		September	3.1-5.0	>6.0	---	---	None		
		October	3.1-5.0	>6.0	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
842: Durtash-----	D								
		Jan-Dec	---	---	---	---	None		
843: Reelow-----	D								
		Jan-Dec	---	---	---	---	None		
Reeser-----	D								
		Jan-Dec	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
843: Sketter-----	C	Jan-Dec	---	---	---	---	None	
844: Metmill, very gravelly ashy loam-----	C/D	January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	---	---	---	---	None	
		May	2.8-5.0	>6.0	---	---	None	
		June	1.8-2.8	>6.0	---	---	None	
		July	1.8-2.8	>6.0	---	---	None	
		August	2.8-5.0	>6.0	---	---	None	
		September	2.8-5.0	>6.0	---	---	None	
		October	2.8-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
850: Reelow-----	D	Jan-Dec	---	---	---	---	None	
852: Durtash-----	D	Jan-Dec	---	---	---	---	None	
853: Nint-----	C	Jan-Dec	---	---	---	---	None	
McDaniel-----	C	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
854: Shinn-----	D	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
854: Shushuskin-----	C	Jan-Dec	---	---	---	---	---	None	
855: Swauk-----	D	Jan-Dec	---	---	---	---	---	None	
Elkheights-----	B	Jan-Dec	---	---	---	---	---	None	
Lablue-----	D	Jan-Dec	---	---	---	---	---	None	
858: Shinn-----	D	Jan-Dec	---	---	---	---	---	None	
Pachneum-----	C	Jan-Dec	---	---	---	---	---	None	
Nint-----	C	Jan-Dec	---	---	---	---	---	None	
860: Laufer-----	D	Jan-Dec	---	---	---	---	---	None	
Thiessen-----	C	Jan-Dec	---	---	---	---	---	None	
862: Millhouse-----	B	Jan-Dec	---	---	---	---	---	None	
864: Reelow-----	D	Jan-Dec	---	---	---	---	---	None	
868: Reelow-----	D	Jan-Dec	---	---	---	---	---	None	
Reeser-----	D	Jan-Dec	---	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
868: Lablue-----	D	Jan-Dec	---	---	---	---	None		
869: Weirman, very gravelly sandy loam-----	A	January February March April May June July August September October November December	---	---	---	---	None None None None None None None None None None None None		
Weirman, very cobbly sandy loam-----	A	January February March April May June July August September October November December	3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 ---	>6.0 >6.0 >6.0 >6.0 >6.0 ---	---	---	None None None None None None None None None None None None		
870: Millhouse-----	B	Jan-Dec	---	---	---	---			None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Frequency
			Upper limit	Lower limit	Surface water depth	Duration			
870: Metser-----	D		Ft	Ft	Ft				
		January	---	---	---	---	---	None	
		February	---	---	---	---	---	None	
		March	---	---	---	---	---	None	
		April	---	---	---	---	---	None	
		May	3.1-5.0	>6.0	---	---	---	None	
		June	3.1-5.0	>6.0	---	---	---	None	
		July	2.5-3.1	>6.0	---	---	---	None	
		August	2.5-3.1	>6.0	---	---	---	None	
		September	3.1-5.0	>6.0	---	---	---	None	
		October	3.1-5.0	>6.0	---	---	---	None	
		November	---	---	---	---	---	None	
		December	---	---	---	---	---	None	
871: Sketter-----	C	Jan-Dec	---	---	---	---	---	None	
Millhouse-----	B	Jan-Dec	---	---	---	---	---	None	
Lablue-----	D	Jan-Dec	---	---	---	---	---	None	
872: Elkheights-----	B	Jan-Dec	---	---	---	---	---	None	
Swauk-----	D	Jan-Dec	---	---	---	---	---	None	
873: Lablue-----	D	Jan-Dec	---	---	---	---	---	None	
Sketter-----	C	Jan-Dec	---	---	---	---	---	None	
Reelow-----	D	Jan-Dec	---	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
875: Reeser-----	D	Jan-Dec	---	---	---	---	None		
Sketter-----	C	Jan-Dec	---	---	---	---	None		
Weirman-----	A	January February March April May June July August September October November December	3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 3.5-5.0 --- --- --- --- --- --- ---	>6.0 >6.0 >6.0 >6.0 >6.0 --- --- --- --- --- --- ---	--- --- --- --- --- --- --- --- --- --- --- ---	None None None None None None None None None None None None			
877: Maxhill-----	C	Jan-Dec	---	---	---	---	None		
878: Nint-----	C	Jan-Dec	---	---	---	---	None		
Rubble land-----	---	Jan-Dec	---	---	---	---	None		
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None		
879: Patron-----	C	Jan-Dec	---	---	---	---	None		
Patron-----	C	Jan-Dec	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
880:			<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
Elkheights-----	B	Jan-Dec	---	---	---	---	None		
Qualla-----	C	January	---	---	---	---	None		
		February	2.3-2.8	2.5-3.3	---	---	None		
		March	2.3-2.8	2.5-3.3	---	---	None		
		April	2.3-2.8	2.5-3.3	---	---	None		
		May	2.3-2.8	2.5-3.3	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
882:									
Weirman, very gravelly sandy loam-----	A	January	3.5-5.0	>6.0	---	---	None		
		February	3.5-5.0	>6.0	---	---	None		
		March	3.5-5.0	>6.0	---	---	None		
		April	3.5-5.0	>6.0	---	---	None		
		May	3.5-5.0	>6.0	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
882: Weirman, very cobbly sandy loam-----	A		Ft	Ft	Ft			
		January	3.5-5.0	>6.0	---	---	None	
		February	3.5-5.0	>6.0	---	---	None	
		March	3.5-5.0	>6.0	---	---	None	
		April	3.5-5.0	>6.0	---	---	None	
		May	3.5-5.0	>6.0	---	---	None	
		June	3.5-5.0	>6.0	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
December	---	---	---	---	None			
Kayak-----	B/D							
		January	---	---	---	---	None	
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	3.2-5.0	>6.0	---	---	None	
		May	2.4-3.2	>6.0	---	---	None	
		June	1.4-2.4	>6.0	---	---	None	
		July	1.4-2.4	>6.0	---	---	None	
		August	2.4-3.2	>6.0	---	---	None	
		September	3.2-5.0	>6.0	---	---	None	
		October	3.2-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
December	---	---	---	---	None			
883: Nint-----	C							
		Jan-Dec	---	---	---	---	None	
McDaniel-----	C							
		Jan-Dec	---	---	---	---	None	
Laufer-----	D							
		Jan-Dec	---	---	---	---	None	
884: Maxhill-----	C							
		Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
885: Palerf-----	D	Jan-Dec	---	---	---	---	None	
Ralock-----	C	Jan-Dec	---	---	---	---	None	
Vantage-----	D	Jan-Dec	---	---	---	---	None	
886: Camaspach-----	D	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
Whiskeydick-----	D	Jan-Dec	---	---	---	---	None	
887: Lainand-----	C	Jan-Dec	---	---	---	---	None	
Blint-----	C	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
889: Vantage-----	D	Jan-Dec	---	---	---	---	None	
Palerf-----	D	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
890: Camaspach-----	D	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
890: Tankse1-----	C	Jan-Dec	---	---	---			
Rubble land-----	--	Jan-Dec	---	---	---			None
891: Tankse1-----	C	Jan-Dec	---	---	---			None
Rubble land-----	--	Jan-Dec	---	---	---			None
Rock outcrop-----	--	Jan-Dec	---	---	---			None
892: Palerf-----	D	Jan-Dec	---	---	---			None
Rubble land-----	--	Jan-Dec	---	---	---			None
Rock outcrop-----	--	Jan-Dec	---	---	---			None
893: Rubble land-----	--	Jan-Dec	---	---	---			None
Camaspach-----	D	Jan-Dec	---	---	---			None
Rock outcrop-----	--	Jan-Dec	---	---	---			None
894: Vantage-----	D	Jan-Dec	---	---	---			None
Clerf-----	D	Jan-Dec	---	---	---			None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
894: Wipple-----	C	Jan-Dec	---	---	---	---	---	None	
896: Argabak-----	D	Jan-Dec	---	---	---	---	---	None	
Camaspatch-----	D	Jan-Dec	---	---	---	---	---	None	
897: Nanum, flooded-----	C/D	January February March April May June July August September October November December	---	---	---	---	---	None None None None None None None None None None None None	
898: Shinn-----	D	Jan-Dec	---	---	---	---	---	None	
Laufer-----	D	Jan-Dec	---	---	---	---	---	None	
Nint-----	C	Jan-Dec	---	---	---	---	---	None	
899: Bedron-----	C	Jan-Dec	---	---	---	---	---	None	
Nint-----	C	Jan-Dec	---	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
900: Deedale, flooded-----	D		Ft	Ft	Ft				
		January	---	---	---	---	---	None	
		February	---	---	---	---	---	None	
		March	2.6-3.0	>6.0	---	---	---	None	
		April	2.1-2.6	>6.0	---	---	---	None	
		May	1.6-2.1	>6.0	---	---	---	None	
		June	1.0-1.6	>6.0	---	---	---	None	
		July	1.0-1.6	>6.0	---	---	---	None	
		August	1.6-2.1	>6.0	---	---	---	None	
		September	2.1-2.6	>6.0	---	---	---	None	
		October	2.6-3.0	>6.0	---	---	---	None	
		November	3.0-4.5	>6.0	---	---	---	None	
		December	---	---	---	---	---	None	
901: Niben-----	C								
		Jan-Dec	---	---	---	---	---	None	
Vantage-----	D								
		Jan-Dec	---	---	---	---	---	None	
Benwy-----	B								
		Jan-Dec	---	---	---	---	---	None	
902: Patron-----	C								
		Jan-Dec	---	---	---	---	---	None	
Camaspach-----	D								
		Jan-Dec	---	---	---	---	---	None	
903: Marlic-----	D								
		Jan-Dec	---	---	---	---	---	None	
Zen-----	C								
		Jan-Dec	---	---	---	---	---	None	
Laric-----	D								
		Jan-Dec	---	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
905: Vantage-----	D	Jan-Dec	---	---	---	Ft		
Niben-----	C	Jan-Dec	---	---	---	---	---	None
Clerf-----	D	Jan-Dec	---	---	---	---	---	None
906: Levnik-----	D	Jan-Dec	---	---	---	---	---	None
Nosser-----	C	Jan-Dec	---	---	---	---	---	None
Nevo-----	D	Jan-Dec	---	---	---	---	---	None
910: Winchester-----	A	Jan-Dec	---	---	---	---	---	None
Sagehill-----	B	Jan-Dec	---	---	---	---	---	None
Burbank-----	A	Jan-Dec	---	---	---	---	---	None
911: Sagehill-----	B	Jan-Dec	---	---	---	---	---	None
Burbank-----	A	Jan-Dec	---	---	---	---	---	None
Malaga-----	B	Jan-Dec	---	---	---	---	---	None
914: Disage-----	D	Jan-Dec	---	---	---	---	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency
914: Cienage-----	D	Jan-Dec	---	---	---	---	None
915: Nosser-----	C	Jan-Dec	---	---	---	---	None
Levnik-----	D	Jan-Dec	---	---	---	---	None
916: Nosser-----	C	Jan-Dec	---	---	---	---	None
Levnik-----	D	Jan-Dec	---	---	---	---	None
917: Nevo-----	D	Jan-Dec	---	---	---	---	None
920: Esquatzel-----	B	Jan-Dec	---	---	---	---	None
Aquolls-----	B/D	January February March April May June July August September October November December	1.5-5.0 1.0-1.5 0.4-1.0 0.0-0.4 0.0-0.4 0.0-0.4 0.4-1.0 1.0-1.5 1.5-5.0 1.5-5.0 1.5-5.0 1.5-5.0	>6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0 >6.0	---	---	None None None None None None None None None None None None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
920: Weirman-----	A		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		January	3.5-5.0	>6.0	---	---	None		
		February	3.5-5.0	>6.0	---	---	None		
		March	3.5-5.0	>6.0	---	---	None		
		April	3.5-5.0	>6.0	---	---	None		
		May	3.5-5.0	>6.0	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
	December	---	---	---	---	None			
921: Fortyday-----	D								
		Jan-Dec	---	---	---	---	None		
Nevo-----	D								
		Jan-Dec	---	---	---	---	None		
Rock outcrop-----	---								
		Jan-Dec	---	---	---	---	None		
922: Drino-----	C								
		Jan-Dec	---	---	---	---	None		
Fortyday-----	D								
		Jan-Dec	---	---	---	---	None		
923: Timmerman-----	A								
		Jan-Dec	---	---	---	---	None		
Sagehill-----	B								
		Jan-Dec	---	---	---	---	None		
924: Malaga, stony sandy loam--	B								
		Jan-Dec	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
927: Disage-----	D	Jan-Dec	---	---	---	---	None	
Sohappy-----	B	Jan-Dec	---	---	---	---	None	
Clenage-----	D	Jan-Dec	---	---	---	---	None	
928: Mozen-----	C	Jan-Dec	---	---	---	---	None	
Argabak-----	D	Jan-Dec	---	---	---	---	None	
Yrtneg-----	D	Jan-Dec	---	---	---	---	None	
929: Neviot-----	B	Jan-Dec	---	---	---	---	None	
Palerf-----	D	Jan-Dec	---	---	---	---	None	
Rubble land-----	---	Jan-Dec	---	---	---	---	None	
932: Volinger-----	C	Jan-Dec	---	---	---	---	None	
Mozen-----	C	Jan-Dec	---	---	---	---	None	
933: Mozen-----	C	Jan-Dec	---	---	---	---	None	
Volinger-----	C	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
933: Yrtneg-----	D	Jan-Dec	---	---	---	---	None	
936: Shushuskin-----	C	Jan-Dec	---	---	---	---	None	
Pachneum-----	C	Jan-Dec	---	---	---	---	None	
Shinn-----	D	Jan-Dec	---	---	---	---	None	
940: Renslow-----	B	Jan-Dec	---	---	---	---	None	
941: Renslow-----	B	Jan-Dec	---	---	---	---	None	
944: Rubble land-----	---	Jan-Dec	---	---	---	---	None	
Fortyday-----	D	Jan-Dec	---	---	---	---	None	
Rock outcrop-----	---	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency		
948: Hardmauk-----	C		<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
		January	3.2-4.2	3.7-5.0	---	---	None		
		February	2.9-3.2	3.7-5.0	---	---	None		
		March	2.4-2.9	3.7-5.0	---	---	None		
		April	2.9-3.2	3.7-5.0	---	---	None		
		May	3.2-4.2	3.7-5.0	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
Teanaway-----	C								
		January	3.2-4.3	3.3-5.0	---	---	None		
		February	3.2-4.3	3.3-5.0	---	---	None		
		March	3.2-4.3	3.3-5.0	---	---	None		
		April	---	---	---	---	None		
		May	---	---	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		
954: Esquatzel-----	B								
		January	---	---	---	---	None		
		February	---	---	---	---	None		
		March	---	---	---	---	None		
		April	---	---	---	---	None		
		May	---	---	---	---	None		
		June	---	---	---	---	None		
		July	---	---	---	---	None		
		August	---	---	---	---	None		
		September	---	---	---	---	None		
		October	---	---	---	---	None		
		November	---	---	---	---	None		
		December	---	---	---	---	None		

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
955: Esquatzel-----	B		Ft	Ft	Ft			
		January	---	---	---	---	None	None
		February	---	---	---	---	None	None
		March	---	---	---	---	None	None
		April	---	---	---	---	None	None
		May	---	---	---	---	None	None
		June	---	---	---	---	None	None
		July	---	---	---	---	None	None
		August	---	---	---	---	None	None
		September	---	---	---	---	None	None
		October	---	---	---	---	None	None
		November	---	---	---	---	None	None
		December	---	---	---	---	None	None
Weirman-----	B							
		January	3.5-5.0	>6.0	---	---	None	None
		February	3.5-5.0	>6.0	---	---	None	None
		March	3.5-5.0	>6.0	---	---	None	None
		April	3.5-5.0	>6.0	---	---	None	None
		May	3.5-5.0	>6.0	---	---	None	None
		June	---	---	---	---	None	None
		July	---	---	---	---	None	None
		August	---	---	---	---	None	None
		September	---	---	---	---	None	None
		October	---	---	---	---	None	None
		November	---	---	---	---	None	None
		December	---	---	---	---	None	None
Weirman, very cobbly sandy loam-----	A							
		January	3.5-5.0	>6.0	---	---	None	None
		February	3.5-5.0	>6.0	---	---	None	None
		March	3.5-5.0	>6.0	---	---	None	None
		April	3.5-5.0	>6.0	---	---	None	None
		May	3.5-5.0	>6.0	---	---	None	None
		June	---	---	---	---	None	None
		July	---	---	---	---	None	None
		August	---	---	---	---	None	None
		September	---	---	---	---	None	None
		October	---	---	---	---	None	None
		November	---	---	---	---	None	None
		December	---	---	---	---	None	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			D
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	
957: Kayak, rarely flooded-----	B/D	January	Ft	Ft	Ft			
		February	---	---	---	---	None	
		March	---	---	---	---	None	
		April	3.2-5.0	>6.0	---	---	None	
		May	2.4-3.2	>6.0	---	---	None	
		June	1.4-2.4	>6.0	---	---	None	
		July	1.4-2.4	>6.0	---	---	None	
		August	2.4-3.2	>6.0	---	---	None	
		September	3.2-5.0	>6.0	---	---	None	
		October	3.2-5.0	>6.0	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
958: Weirman, rarely flooded-----	A	January	3.5-5.0	>6.0	---	---	None	
		February	3.5-5.0	>6.0	---	---	None	
		March	3.5-5.0	>6.0	---	---	None	
		April	3.5-5.0	>6.0	---	---	None	
		May	3.5-5.0	>6.0	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
959: Grinrod-----	C	Jan-Dec	---	---	---	---	None	
960: Horseflat-----	D	Jan-Dec	---	---	---	---	None	
961: Winchester-----	A	Jan-Dec	---	---	---	---	None	
962: Burbank-----	A	Jan-Dec	---	---	---	---	None	
963: Malaga-----	B	Jan-Dec	---	---	---	---	None	

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Frequency
			Upper limit	Lower limit	Surface water depth	Duration			
963: Dumps, landfill-----	---	Jan-Dec	---	---	---	---			None
966: Ellisforde-----	C	Jan-Dec	---	---	---	---			None
980: Rock Creek-----	D	Jan-Dec	---	---	---	---			None
981: Taneum-----	C	Jan-Dec	---	---	---	---			None
1006: Rock outcrop-----	---	Jan-Dec	---	---	---	---			None
Rubble land-----	---	Jan-Dec	---	---	---	---			None
Glaciers, icefields-----	---	Jan-Dec	---	---	---	---			---
1007: Rock outcrop-----	---	Jan-Dec	---	---	---	---			None
Andic Humicryods-----	C	Jan-Dec	---	---	---	---			None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	D
1441: Teanaway-----			Ft	Ft	Ft			
	C	January	3.2-4.3	3.3-5.0	---	---	None	
		February	3.2-4.3	3.3-5.0	---	---	None	
		March	3.2-4.3	3.3-5.0	---	---	None	
		April	---	---	---	---	None	
		May	---	---	---	---	None	
		June	---	---	---	---	None	
		July	---	---	---	---	None	
		August	---	---	---	---	None	
		September	---	---	---	---	None	
		October	---	---	---	---	None	
		November	---	---	---	---	None	
		December	---	---	---	---	None	
6710: McDaniel-----	C	Jan-Dec	---	---	---	---	None	
DAM: Dam-----	---	Jan-Dec	---	---	---	---	None	
W: Water-----	---	Jan-Dec	---	---	---	---	---	

Table 12.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a were not estimated.)

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
2: Saydab-----	Lithic bedrock	20-40	---	Indurated	0	---
3: Naxing-----	---	---	---	---	0	---
4: Naxing-----	---	---	---	---	0	---
6: Ganis-----	Lithic bedrock	16-20	---	Indurated	0	---
8: Sapkin-----	Lithic bedrock	20-40	---	Indurated	0	---
9: Naxing-----	---	---	---	---	0	---
10: Anatone-----	Lithic bedrock	10-20	---	Indurated	0	---
10Y: Bocker-----	Lithic bedrock	4-10	---	Indurated	0	---
11: Sapkin-----	Lithic bedrock	20-40	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
12: Sapkin-----	Lithic bedrock	20-40	---	Indurated	0	---
13: Jumpe-----	---	---	---	---	0	---
14: Jumpe-----	---	---	---	---	0	---
15: Stemilt-----	---	---	---	---	0	---

Table 12.--Soil Features---Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
16: Stemilt-----	---	In	In		In	In
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
18: Loneridge-----	Abrupt textural change	10-20	---	Noncemented	0	---
19: Darland-----	---	---	---	---	0	---
20: Darland, moist-----	---	---	---	---	0	---
24: Loneridge, north slopes	Abrupt textural change	10-20	---	Noncemented	0	---
27: Tekison-----	Abrupt textural change	4-16	---	Noncemented	0	---
28: Odo-----	---	---	---	---	0	---
29: Stemilt, warm-----	---	---	---	---	0	---
30: Stemilt-----	---	---	---	---	0	---
32: Stemilt-----	---	---	---	---	0	---
33: Bocker-----	Lithic bedrock	4-10	---	Indurated	0	---
Jumpe-----	---	---	---	---	0	---
34: Bocker-----	Lithic bedrock	4-10	---	Indurated	0	---
Sapkin-----	Lithic bedrock	20-40	---	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial Total	
		In	In		In	In
35: Bocker-----	Lithic bedrock	4-10	---	Indurated	0	---
Stemilt-----	---	---	---	---	0	---
40: Rubble land-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
41: Cliffdell-----	---	---	---	---	0	---
42: Cliffdell-----	---	---	---	---	0	---
48: Jumpe, north slopes----	---	---	---	---	0	---
49: Jumpe, south slopes----	---	---	---	---	0	---
50: Jumpe, south slopes----	---	---	---	---	0	---
51: Jumpe-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
52: Loneridge, north slopes	Abrupt textural change	10-20	---	Noncemented	0	---
53: Loneridge, south slopes	Abrupt textural change	10-20	---	Noncemented	0	---
53M: Tekison-----	Abrupt textural change	4-16	---	Noncemented	0	---
54: Loneridge, south slopes	Abrupt textural change	10-20	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
54M: Tekison-----	Abrupt textural change	4-16	---	Noncemented	0	---
55: Shinn-----	Lithic bedrock	4-10	---	Indurated	0	---
56: Shinn-----	Lithic bedrock	4-10	---	Indurated	0	---
Nint-----	Lithic bedrock	20-40	---	Indurated	0	---
Shushuskin-----	Lithic bedrock	20-40	---	Indurated	0	---
57: Nard, sandstone substratum-----	Paralithic bedrock	40-60	---	Moderately cemented	0	---
62: Pachneum-----	---	---	---	---	0	---
64: Meystre-----	---	---	---	---	0	---
65: Meystre-----	---	---	---	---	0	---
66: Jumpmore, south slopes, stony surface	---	---	---	---	0	---
67: Jumpmore, north slopes	---	---	---	---	0	---
69: Stirrup-----	Lithic bedrock	40-60	---	Indurated	0	---
70: McDaniel-----	---	---	---	---	0	---
71: Kiper-----	Strongly contrasting textural stratification	25-41	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
75: Yahne-----	Abrupt textural change	15-25	---	Noncemented	0	---
76: Yahne-----	Abrupt textural change	15-25	---	Noncemented	0	---
77: Ainsley-----	---	---	---	---	0	---
78: Ainsley-----	---	---	---	---	0	---
80: Cliffdell-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
81: Terence-----	---	---	---	---	0	---
83: Terence-----	---	---	---	---	0	---
85: Spexarth-----	Paralithic bedrock	20-40	---	Moderately cemented	0	---
86: Osborn, south slopes----	Paralithic bedrock	20-40	---	Moderately cemented	0	---
87: Osborn, north slopes----	Paralithic bedrock	20-40	---	Moderately cemented	0	---
89: Cryaquepts-----	---	---	---	---	0	---
90: Bertolotti, south slopes-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
91: Bertolotti, north slopes-----	---	In	In	---	In	In
92: Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
Bertolotti-----	---	---	---	---	0	---
93: Bertolotti-----	---	---	---	---	0	---
96: Terence-----	---	---	---	---	0	---
97: Stilgar-----	---	---	---	---	0	---
101: Standup-----	---	---	---	---	0	---
102: Standup, north slopes--	---	---	---	---	0	---
104: Carrier-----	---	---	---	---	0	---
105: Carrier-----	---	---	---	---	0	---
106: Carrier-----	---	---	---	---	0	---
108: Jimek-----	Lithic bedrock	20-40	---	Indurated	0	---
112: Natkim-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
115: Jimek-----	Lithic bedrock	20-40	---	Indurated	0	---
123: Kaner-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
125: Bearrun-----	Abrupt textural change	10-27	---	Noncemented	0	---
128: Kafing, north slopes---	---	---	---	---	0	---
129: Kafing, south slopes---	---	---	---	---	0	---
130: Brisky-----	Lithic bedrock	10-20	---	Indurated	0	---
131: Kladnick, warm-----	---	---	---	---	0	---
137: Dumps, mine-----	---	---	---	---	0	---
138: Pits, mine-----	Lithic bedrock	0-0	---	Indurated	0	0
139: Nard-----	---	---	---	---	0	---
141: Nard-----	---	---	---	---	0	---
142: Scotties-----	Lithic bedrock	40-60	---	Indurated	0	---
144: Nard-----	---	---	---	---	0	---
146: Nard-----	---	---	---	---	0	---
158: Kiper-----	---	---	---	---	0	---
159: Ampad, south slopes---	Paralithic bedrock	20-40	---	Moderately cemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial Total	
160: Cumulic Haploxerolls---	---	In ---	In ---	---	In ---	High
161: Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0 ---	None
162: Hakker-----	Strongly contrasting textural stratification Lithic bedrock	19-33 40-60	---	Noncemented Indurated	0 ---	Moderate
163: Nard, north slope-----	---	---	---	---	0 ---	Moderate
164: Nard-----	---	---	---	---	0 ---	Moderate
166: Ampad, warm-----	Paralithic bedrock	20-40	---	Moderately cemented	0 ---	Moderate
167: Keechelus, south slopes	---	---	---	---	0 ---	Moderate
Nard-----	---	---	---	---	0 ---	Moderate
Kafing, south slopes---	---	---	---	---	0 ---	Moderate
168: Keechelus, north slopes	---	---	---	---	0 ---	Moderate
Nard-----	---	---	---	---	0 ---	Moderate
Kafing, north slopes---	---	---	---	---	0 ---	Moderate
170: Ampad-----	Paralithic bedrock	20-40	---	Moderately cemented	0 ---	Moderate
175: Keechelus-----	---	---	---	---	0 ---	Moderate
176: Keechelus, south slopes	---	---	---	---	0 ---	Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
177: Keechelus, north slopes	---	---	---	---	0	---
180: Nimue-----	---	---	---	---	0	---
181: Nimue-----	---	---	---	---	0	---
182: Haywire-----	Lithic bedrock	20-40	---	Indurated	0	---
183: Haywire-----	Lithic bedrock	20-40	---	Indurated	0	---
185: Andic Dystrocryepts----	Lithic bedrock	20-60	---	Indurated	0	---
186: Stirrup-----	Lithic bedrock	40-60	---	Indurated	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
187: Chinkmin-----	Cemented horizon	20-40	4-17	Moderately cemented	0	---
188: Chinkmin-----	Cemented horizon	20-40	4-17	Moderately cemented	0	---
190: Nimue-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
191: Sutkin-----	---	---	---	---	0	---
194: Osborn-----	Paralithic bedrock	20-40	---	Moderately cemented	0	---
Scotties-----	Lithic bedrock	40-60	---	Indurated	0	---
Chapot-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
195: Scotties-----	Lithic bedrock	40-60	---	Indurated	0	---
Chapot-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
201: Roslyn-----	---	---	---	---	0	---
203: Teanaway-----	---	---	---	---	0	---
204: Teanaway-----	---	---	---	---	0	---
205: Xerofluvents-----	---	---	---	---	0	---
206: Dystroxerepts, south slopes-----	---	---	---	---	0	---
207: Quicksell-----	Abrupt textural change	20-40	---	Noncemented	0	---
208: Patnish-----	Strongly contrasting textural stratification	25-35	---	Noncemented	0	---
Mippon-----	Strongly contrasting textural stratification	10-27	---	Noncemented	0	---
Myzel-----	---	---	---	---	0	---
210: Dystroxerepts-----	---	---	---	---	0	---
211: Teanaway-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
213: Roslyn, moist-----	---	---	---	---	0	---
214: Haplosaprists-----	---	---	---	---	4-10	16-51
216: Roxer-----	---	---	---	---	0	---
217: Roxer-----	---	---	---	---	0	---
218: Bograp-----	---	---	---	---	0	---
220: Roxer, basalt substratum-----	Lithic bedrock	40-50	---	Indurated	0	---
Roxer-----	---	---	---	---	0	---
222: Ampad, north slopes----	Paralithic bedrock	20-40	---	Moderately cemented	0	---
226: Bograp-----	---	---	---	---	0	---
227: Jummer-----	Lithic bedrock	20-40	---	Indurated	0	---
Jumpmore-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
228: Natkim-----	---	---	---	---	0	---
229: Natkim-----	---	---	---	---	0	---
230: Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
Roxer-----	---	---	---	---	0	---

Table 12.--Soil Features---Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
232: Vabus-----	Dense material	20-40	---	Noncemented	0	---
233: Natkim-----	---	---	---	---	0	---
234: Kladnick-----	---	---	---	---	0	---
237: Kladnick-----	---	---	---	---	0	---
238: Racker-----	Strongly contrasting textural stratification	9-15	---	Noncemented	0	---
241: Thetis-----	---	---	---	---	0	---
242: Roxer-----	---	---	---	---	0	---
251: Domerie, stony surface	Lithic bedrock	40-60	---	Indurated	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
252: Domerie, south slopes, stony surface-----	Lithic bedrock	40-60	---	Indurated	0	---
253: Domerie, north slopes, stony surface-----	Lithic bedrock	40-60	---	Indurated	0	---
254: Kachess-----	---	---	---	---	0	---
255: Thetis-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
259: Fluvaquents-----	Strongly contrasting textural stratification	10-20	---	Noncemented	0	---
262: Roslyn, clay loam subsoil-----	---	---	---	---	0	---
263: Volperie-----	Paralithic bedrock	30-40	---	Moderately cemented	0	---
264: Volperie-----	Paralithic bedrock	30-40	---	Moderately cemented	0	---
265: Volperie, warm-----	Paralithic bedrock	30-40	---	Moderately cemented	0	---
266: Volperie, north slopes	Paralithic bedrock	30-40	---	Moderately cemented	0	---
267: Esmeralda, moist-----	---	---	---	---	0	---
268: Vitricryands-----	Lithic bedrock	20-40	---	Indurated	0	---
270: Roxer-----	---	---	---	---	0	---
Deroux-----	Lithic bedrock	20-38	---	Indurated	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
271: Roxer-----	---	---	---	---	0	---
Deroux-----	Lithic bedrock	20-38	---	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
272: Andic Dystroxerepts----	Lithic bedrock	20-60	---	Indurated	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
280: Esmeralda-----	---	---	---	---	0	---
281: Vaneppe-----	Paralithic bedrock	20-40	---	Moderately cemented	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
284: Esmeralda, bouldery surface-----	---	---	---	---	0	---
290: Andic Dystrocryepts----	Lithic bedrock	10-60	---	Indurated	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
301: Vabus-----	Dense material	20-40	---	Noncemented	0	---
302: Vabus-----	Dense material	20-40	---	Noncemented	0	---
304: Madrak-----	Lithic bedrock	20-40	---	Indurated	0	---
306: Vabus-----	Dense material	20-40	---	Noncemented	0	---
308: Vabus-----	Dense material	20-40	---	Noncemented	0	---
309: Vabus-----	Dense material	20-40	---	Noncemented	0	---
313: Vabus-----	Dense material	20-40	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Un-
	Kind	Depth to top	Thickness	Hardness	Initial	Total	
		In	In		In	In	
315: Lemah-----	---	---	---	---	0	---	Moderate
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---	None
316: Cryorthents-----	Strongly contrasting textural stratification	20-40	---	Noncemented	0	---	Low
317: Ronsel-----	---	---	---	---	0	---	Moderate
318: Vabus-----	Dense material	20-40	---	Noncemented	0	---	Moderate
319: Vabus, south slopes----	Dense material	20-40	---	Noncemented	0	---	Moderate
320: Vabus-----	Dense material	20-40	---	Noncemented	0	---	Moderate
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---	None
321: Andic Dystrocryepts, avalanche chute-----	---	---	---	---	0	---	Moderate
Andic Haplocryods-----	---	---	---	---	0	---	Moderate
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---	None
322: Vabus-----	Dense material	20-40	---	Noncemented	0	---	Moderate
323: Cryorthents, cool-----	Strongly contrasting textural stratification	8-17	---	Noncemented	0	---	Low
324: Ronsel-----	---	---	---	---	0	---	Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
328: Cryofluvents-----	Strongly contrasting textural stratification	In 10-20	In ---	Noncemented	In 0	In ---
Dystrocryepts-----	Strongly contrasting textural stratification	20-40	---	Noncemented	0	---
332: Stirrup-----	---	---	---	---	0	---
333: Stirrup-----	---	---	---	---	0	---
334: Stirrup-----	---	---	---	---	0	---
335: Vabus-----	Dense material	20-40	---	Noncemented	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
336: Ronsel-----	---	---	---	---	0	---
338: Gilpar-----	---	---	---	---	0	---
346: Gilpar-----	---	---	---	---	0	---
347: Gilpar-----	---	---	---	---	0	---
402: Esmeralda, bouldery surface-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
404: Polallie-----	Lithic bedrock	20-40	---	Indurated	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
405: Polallie-----	Lithic bedrock	20-40	---	Indurated	0	---
406: Polallie-----	Lithic bedrock	20-40	---	Indurated	0	---
408: Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
Domerie-----	Lithic bedrock	40-60	---	Indurated	0	---
409: Domerie, warm-----	Lithic bedrock	40-60	---	Indurated	0	---
410: Tanaha-----	Duripan	20-40	4-12	Moderately cemented	0	---
411: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
414: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
415: Benwy-----	Duripan	40-60	4-17	Indurated	0	---
417: Benwy-----	Duripan	40-60	4-17	Indurated	0	---
422: Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---
424: Cleman-----	---	---	---	---	0	---
427: Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
429: Grinrod-----	Lithic bedrock	20-40	---	Indurated	0	---
						Moderate
						Low
Horseflat-----	Lithic bedrock	12-20	---	Indurated	0	---
						Moderate
						Low
431: Grinrod-----	Lithic bedrock	20-40	---	Indurated	0	---
						Moderate
						Low
Horseflat-----	Lithic bedrock	12-20	---	Indurated	0	---
						Moderate
						Low
Rubble land-----	---	---	---	---	0	---
						None
433: Kiona-----	---	---	---	---	0	---
						Low
						Mod
Rubble land-----	---	---	---	---	0	---

434: Laufer-----	Lithic bedrock	10-20	---	Indurated	---	---
						Moderate
Thiessen-----	Lithic bedrock	20-40	---	Indurated	---	---
						Moderate
438: Blint-----	Lithic bedrock	20-40	---	Indurated	0	---
						Moderate
						Low
440: Nitzel-----	---	---	---	---	0	---
						Moderate
						Hig
450: Argixerolls, south slopes-----	---	---	---	---	0	---
						Moderate
						Hig
Durixerolls, south slopes-----	Duripan	10-40	4-17	Strongly cemented	0	---
						Moderate
452: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
						Moderate
						Low
Zen-----	Lithic bedrock	20-40	---	Indurated	0	---
						Moderate
						Mod
Grinrod-----	Lithic bedrock	20-40	---	Indurated	0	---
						Moderate
						Low
456: Cheviot-----	---	---	---	---	0	---
						Moderate
						Mod
Rubble land-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
457: Cheviot-----	---	---	---	---	0	---
458: Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---
Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
Cheviot-----	---	---	---	---	0	---
460: Neviot-----	---	---	---	---	---	---
Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---
Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
461: Kiona-----	---	---	---	---	0	---
465: Horseflat-----	Lithic bedrock	12-20	---	Indurated	0	---
466: Benwy-----	Duripan	40-60	4-17	Indurated	0	---
470: Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
476: Ralock-----	---	---	---	---	0	---
Horseflat-----	Lithic bedrock	12-20	---	Indurated	0	---
480: Nanum-----	---	---	---	---	0	---
481: Nanum-----	---	---	---	---	0	---
482: Rollinger-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total	
		In	In		In	In	
485: Rollinger-----	---	---	---	---	0	---	Moderate
487: Rollinger-----	---	---	---	---	0	---	Moderate
489: Rollinger-----	---	---	---	---	0	---	Moderate
492: Rollinger-----	---	---	---	---	0	---	Moderate
493: Rollinger-----	---	---	---	---	0	---	Moderate
494: Caliralls-----	---	---	---	---	0	---	Moderate
495: Caliralls-----	---	---	---	---	0	---	Moderate
Clerf----- Lithic bedrock		20-40	---	Indurated	0	---	Moderate
497: Camaspetch----- Lithic bedrock		12-20	---	Indurated	0	---	Moderate
498: Caliralls-----	---	---	---	---	0	---	Moderate
Clerf----- Lithic bedrock		20-40	---	Indurated	0	---	Moderate
500: Vantage----- Lithic bedrock		11-20	---	Indurated	0	---	Moderate
502: Vantage----- Lithic bedrock		11-20	---	Indurated	0	---	Moderate
503: Terlan----- Duripan		10-20	4-17	Indurated	0	---	Moderate
Durtash----- Duripan		10-20	4-17	Strongly cemented	0	---	Moderate
Selah----- Duripan		20-40	4-17	Indurated	0	---	Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
509: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---
511: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---
512: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---
513: Meloza-----	---	---	---	---	0	---
Cowiche-----	---	---	---	---	---	---
516: Selah-----	Duripan	20-40	4-17	Indurated	0	---
517: Selah-----	Duripan	20-40	4-17	Indurated	0	---
519: Selah-----	Duripan	20-40	4-17	Indurated	0	---
523: Terlan-----	Duripan	10-20	4-17	Indurated	0	---
524: Terlan-----	Duripan	10-20	4-17	Indurated	0	---
525: Terlan-----	Duripan	10-20	4-17	Indurated	0	---
532: Selah-----	Duripan	20-40	4-17	Indurated	0	---
Terlan-----	Duripan	10-20	4-17	Indurated	0	---
533: Selah-----	Duripan	20-40	4-17	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
535: Zen-----	Lithic bedrock	20-40	---	Indurated	0	---
538: Zen-----	Lithic bedrock	20-40	---	Indurated	0	---
539: Zen-----	Lithic bedrock	20-40	---	Indurated	0	---
553: Ralock-----	---	---	---	---	0	---
554: Pachneum-----	---	---	---	---	0	---
557: Pachneum-----	---	---	---	---	0	---
558: Argixerolls, north slopes-----	---	---	---	---	0	---
Durixerolls, north slopes-----	Duripan	10-40	4-17	Strongly cemented	0	---
561: Elkheights-----	Dense material	40-60	---	Noncemented	0	---
563: Mendian-----	---	---	---	---	0	---
570: Wipple-----	Lithic bedrock	40-60	---	Indurated	0	---
571: Wipple-----	Lithic bedrock	40-60	---	Indurated	0	---
580: Woldale-----	---	---	---	---	0	---
584: Varodale-----	---	---	---	---	0	---
585: Varodale-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial Total	
586: Vanderbilt, moderately wet-----	---	In ---	In ---	---	In ---	---
587: Argixerolls-----	---	---	---	---	0 ---	Moderate Low
589: Nack-----	---	---	---	---	0 ---	Moderate Moderate
Brickmill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0 ---	Moderate Moderate
590: Brickmill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0 ---	Moderate Moderate
Nanum-----	---	---	---	---	0 ---	Moderate Moderate
592: Umtanum-----	---	---	---	---	0 ---	Moderate Moderate
593: Camaspetch-----	Lithic bedrock	12-20	---	Indurated	0 ---	Moderate Moderate
Whiskeydick-----	Lithic bedrock	20-40	---	Indurated	0 ---	Moderate Moderate
594: Camaspetch-----	Lithic bedrock	12-20	---	Indurated	0 ---	Moderate Moderate
Whiskeydick-----	Lithic bedrock	20-40	---	Indurated	0 ---	Moderate Moderate
595: Camaspetch-----	Lithic bedrock	12-20	---	Indurated	0 ---	Moderate Moderate
Whiskeydick-----	Lithic bedrock	20-40	---	Indurated	0 ---	Moderate Moderate
598: Zillah-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0 ---	High High

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
601: Brickmill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
602: Brickmill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
603: Reeser-----	Duripan	20-40	4-17	Moderately cemented	0	---
604: Reeser-----	Duripan	20-40	4-17	Moderately cemented	0	---
605: Disage-----	Lithic bedrock	10-20	---	Indurated	0	---
606: Disage-----	Lithic bedrock	10-20	---	Indurated	0	---
607: Disage-----	Lithic bedrock	10-20	---	Indurated	0	---
608: Clenage-----	Lithic bedrock	20-40	---	Indurated	0	---
609: Ackna-----	---	---	---	---	0	---
610: Ackna-----	---	---	---	---	0	---
612: Nitcha-----	---	---	---	---	0	---
614: Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
618: Nitzel, gravelly substratum-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
621: Mitta, flooded-----	---	---	---	---	0	---
622: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
623: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
624: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
625: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
Durtash-----	Duripan	10-20	4-17	Strongly cemented	0	---
626: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
Selah-----	Duripan	20-40	4-17	Indurated	0	---
Durtash-----	Duripan	10-20	4-17	Strongly cemented	0	---
632: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
633: Nack-----	---	---	---	---	0	---
634: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
Durtash-----	Duripan	10-20	4-17	Strongly cemented	0	---
635: Opnish-----	---	---	---	---	0	---
637: Tanksel-----	Lithic bedrock	20-40	---	Indurated	0	---
Lainand-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
638: Tanksel-----	Lithic bedrock	20-40	---	Indurated	0	---
Lainand-----	---	---	---	---	0	---
Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
640: Elkheights-----	Dense material	40-60	---	Noncemented	0	---
644: Drino-----	Lithic bedrock	20-40	---	Indurated	0	---
Sohappy-----	Lithic bedrock	50-60	---	Indurated	0	---
Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
650: Tanksel-----	Lithic bedrock	20-40	---	Indurated	0	---
Patron-----	---	---	---	---	0	---
Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
656: Tanksel-----	Lithic bedrock	20-40	---	Indurated	0	---
Patron-----	---	---	---	---	0	---
Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
658: Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
Tanksel-----	Lithic bedrock	20-40	---	Indurated	0	---
661: Drysel-----	Duripan	20-40	4-17	Indurated	0	---
662: Ralock-----	---	---	---	---	0	---
Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
663: Ralock-----	---	---	---	---	0	---
Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---
667: Laufer-----	Lithic bedrock	10-20	---	Indurated	---	---
Thiessen-----	Lithic bedrock	20-40	---	Indurated	---	---
668: Laufer-----	Lithic bedrock	10-20	---	Indurated	---	---
Thiessen-----	Lithic bedrock	20-40	---	Indurated	---	---
Rubble land-----	---	---	---	---	0	---
669: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
Zen-----	Lithic bedrock	20-40	---	Indurated	0	---
Grinrod-----	Lithic bedrock	20-40	---	Indurated	0	---
670: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
Whiskeydick-----	Lithic bedrock	20-40	---	Indurated	0	---
672: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
Mozen-----	Lithic bedrock	20-40	---	Indurated	---	---
674: Durtash, gravelly-----	Duripan	10-20	4-17	Strongly cemented	0	---
684: Nitzel-----	---	---	---	---	0	---
Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
693: Tanksel	Lithic bedrock	20-40	---	Indurated	0	---
Wockum	---	---	---	---	0	---
695: Drino	Lithic bedrock	20-40	---	Indurated	0	---
Sohappy	Lithic bedrock	50-60	---	Indurated	0	---
Fortyday	Lithic bedrock	14-20	---	Indurated	0	---
697: Wockum	---	---	---	---	0	---
Blint	Lithic bedrock	20-40	---	Indurated	0	---
698: Wockum	---	---	---	---	0	---
Blint	Lithic bedrock	20-40	---	Indurated	0	---
Windry	Lithic bedrock	14-20	---	Indurated	0	---
706: Kayak	Strongly contrasting textural stratification	20-40	---	Noncemented	0	---
712: Malaga	Strongly contrasting textural stratification	15-28	---	Noncemented	0	---
713: Malaga	Strongly contrasting textural stratification	15-28	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
715: Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
						Low
717: Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
						High
Drino-----	Lithic bedrock	20-40	---	Indurated	0	---
						Low
Nevo-----	Lithic bedrock	5-10	---	Indurated	0	---
						Low
718: Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
						High
Drino-----	Lithic bedrock	20-40	---	Indurated	0	---
						Low
Nevo-----	Lithic bedrock	5-10	---	Indurated	0	---
						Low
720: Nanum-----	---	---	---	---	0	---
						Moderate
724: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
						Moderate
Durtash-----	Duripan	10-20	4-17	Strongly cemented	0	---
						Moderate
725: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
						Moderate
Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
						Moderate
741: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
						Moderate
Vantage, thin surface--	Lithic bedrock	11-20	---	Indurated	0	---
						Moderate
742: Drino-----	Lithic bedrock	20-40	---	Indurated	0	---
						Low
Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
						High

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
744: Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---
Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
745: Zen-----	Lithic bedrock	20-40	---	Indurated	0	---
Benwy-----	Duripan	40-60	4-17	Indurated	0	---
Laric-----	Lithic bedrock	5-12	---	Indurated	0	---
747: Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---
Ralock-----	---	---	---	---	0	---
Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
748: Malaga-----	Strongly contrasting textural stratification	15-28	---	Noncemented	0	---
751: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
755: Nevo-----	Lithic bedrock	5-10	---	Indurated	0	---
Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
758: Sohappy-----	Lithic bedrock	50-60	---	Indurated	0	---
Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
772: Haploxe-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
772: Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
						Low
Aquolls-----	Strongly contrasting textural stratification	10-20	---	Noncemented	0	---
						Low
774: Drino-----	Lithic bedrock	20-40	---	Indurated	0	---
						Low
Rubble land-----	---	---	---	---	0	---

Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
						None
787: Terlan-----	Duripan	10-20	4-17	Indurated	0	---
						Moderate
Durtash-----	Duripan	10-20	4-17	Strongly cemented	0	---
						Moderate
Selah-----	Duripan	20-40	4-17	Indurated	0	---
						Moderate
789: Deedale-----	---	---	---	---	---	---
						High
790: Mitta-----	---	---	---	---	0	---
						High
791: Mitta, drained-----	---	---	---	---	0	---
						High
792: Brickmill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
						Moderate
793: Zillah-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
						High

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
793: Kayak-----	---	In ---	In ---	---	In 0	In ---
794: Kayak-----	---	---	---	---	0	---
Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
795: Nack-----	---	---	---	---	0	---
Opnish-----	---	---	---	---	0	---
796: Brickmill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
Nack-----	---	---	---	---	0	---
797: Brysill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
799: Brysill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
800: Brysill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
801: Brysill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
802: Brysill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
803: Brysill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
804: Benwy-----	Duripan	40-60	4-17	Indurated	0	---
806: Weirman, very gravelly sandy loam-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
Weirman, very cobbly sandy loam-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
807: Brysill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
Ackna-----	---	---	---	---	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
809: Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
						Low
Kayak-----	---	---	---	---	0	---
						Moderate
Zillah-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
						High
814: Argixerolls, moist, north slopes-----	---	---	---	---	0	---
						Moderate
815: Argixerolls, moist, south slopes-----	---	---	---	---	0	---
						Moderate
816: Patron, cobbly ash silt loam-----	---	---	---	---	0	---
						Moderate
Patron-----	---	---	---	---	0	---
						Moderate
817: Manastash-----	Duripan	20-40	4-17	Indurated	0	---
						Moderate
818: Umtanum-----	---	---	---	---	0	---
						Moderate
819: Millhouse-----	Strongly contrasting textural stratification	20-40	---	Noncemented	0	---
						Moderate
820: Modsel, ash loam-----	---	---	---	---	0	---
						Moderate
Modsel, cobbly ash loam-----	---	---	---	---	0	---
						Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
822: Reeser-----	Duripan	20-40	4-17	Moderately cemented	0	---
						Moderate
Reelow-----	Duripan	10-20	4-17	Moderately cemented	0	---
						Moderate
Sketter-----	Duripan	20-40	4-17	Moderately cemented	0	---
						Moderate
823: Millhouse-----	Strongly contrasting textural stratification	20-40	---	Noncemented	0	---
						Moderate
824: Pachneum-----	---	---	---	---	0	---
						Moderate
825: Pachneum-----	---	---	---	---	0	---
						Moderate
828: Swauk-----	Dense material	29-40	---	Noncemented	0	---
						Moderate
829: Swauk-----	Dense material	29-40	---	Noncemented	0	---
						Moderate
830: Swauk-----	Dense material	29-40	---	Noncemented	0	---
						Moderate
Qualla-----	---	---	---	---	0	---
						Moderate
831: Qualla-----	---	---	---	---	0	---
						Moderate
832: Qualla-----	---	---	---	---	0	---
						Moderate
833: Swauk-----	Dense material	29-40	---	Noncemented	0	---
						Moderate
835: Swauk-----	Dense material	29-40	---	Noncemented	0	---
						Moderate
Qualla-----	---	---	---	---	0	---
						Moderate

Table 12.--Soil Features---Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
838: Nosal-----	---	---	---	---	0	---
839: Vanderbilt-----	---	---	---	---	0	---
841: Metser-----	---	---	---	---	0	---
842: Durtash-----	Duripan	10-20	4-17	Strongly cemented	0	---
843: Reelow-----	Duripan	10-20	4-17	Moderately cemented	0	---
Reeser-----	Duripan	20-40	4-17	Moderately cemented	0	---
Sketter-----	Duripan	20-40	4-17	Moderately cemented	0	---
844: Metmill, very gravelly ashy loam-----	---	---	---	---	0	---
850: Reelow-----	Duripan	10-20	4-17	Moderately cemented	0	---
852: Durtash-----	Duripan	10-20	4-17	Strongly cemented	0	---
853: Nint-----	Lithic bedrock	20-40	---	Indurated	---	---
McDaniel-----	---	---	---	---	0	---
Rubble land-----	---	---	---	---	0	---
854: Shinn-----	Lithic bedrock	4-10	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
Shushuskin-----	Lithic bedrock	20-40	---	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
855: Swauk-----	Dense material	29-40	---	Noncemented	0	---
Elkhights-----	Dense material	40-60	---	Noncemented	0	---
Lablue-----	Duripan	7-10	4-17	Moderately cemented	0	---
858: Shinn-----	Lithic bedrock	4-10	---	Indurated	0	---
Pachneum-----	---	---	---	---	0	---
Nint-----	Lithic bedrock	20-40	---	Indurated	0	---
860: Laufer-----	Lithic bedrock	10-20	---	Indurated	---	---
Thiessen-----	Lithic bedrock	20-40	---	Indurated	---	---
862: Millhouse-----	Strongly contrasting textural stratification	20-40	---	Noncemented	0	---
864: Reelow-----	Duripan	10-20	4-17	Moderately cemented	0	---
868: Reelow-----	Duripan	10-20	4-17	Moderately cemented	0	---
Reeser-----	Duripan	20-40	4-17	Moderately cemented	0	---
Lablue-----	Duripan	7-10	4-17	Moderately cemented	0	---
869: Weirman, very gravelly sandy loam-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
869: Weirman, very cobbly sandy loam-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	--- Low
870: Millhouse-----	Strongly contrasting textural stratification	20-40	---	Noncemented	0	--- Moderate
Metser-----	---	---	---	---	0	--- Moderate
871: Sketter-----	Duripan	20-40	4-17	Moderately cemented	0	--- Moderate
Millhouse-----	Strongly contrasting textural stratification	20-40	---	Noncemented	0	--- Moderate
Lablue-----	Duripan	7-10	4-17	Moderately cemented	0	--- Moderate
872: Elkheights-----	Dense material	40-60	---	Noncemented	0	--- Moderate
Swauk-----	Dense material	29-40	---	Noncemented	0	--- Moderate
873: Lablue-----	Duripan	7-10	4-17	Moderately cemented	0	--- Moderate
Sketter-----	Duripan	20-40	4-17	Moderately cemented	0	--- Moderate
Reelow-----	Duripan	10-20	4-17	Moderately cemented	0	--- Moderate
875: Reesser-----	Duripan	20-40	4-17	Moderately cemented	0	--- Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
875: Sketter-----	Duripan	20-40	4-17	Moderately cemented	0	---
Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
877: Maxhill-----	---	---	---	---	0	Moderate
878: Nint-----	Lithic bedrock	20-40	---	Indurated	---	Moderate
Rubble land-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	None
879: Patron, cobbly ash silt loam-----	---	---	---	---	0	Moderate
Patron-----	---	---	---	---	0	Moderate
880: Elkheights-----	Dense material	40-60	---	Noncemented	0	Moderate
Qualla-----	---	---	---	---	0	Moderate
882: Weirman, very gravelly sandy loam-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	Low
Weirman, very cobbly sandy loam-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	Low
Kayak-----	---	---	---	---	0	Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
883: Nint-----	Lithic bedrock	20-40	---	Indurated	---	---
McDaniel-----	---	---	---	---	0	---
Laufer-----	Lithic bedrock	10-20	---	Indurated	---	---
884: Maxhill-----	Strongly contrasting textural stratification	40-60	---	Noncemented	0	---
885: Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---
Ralock-----	---	---	---	---	0	---
Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
886: Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
Whiskeydick-----	Lithic bedrock	20-40	---	Indurated	0	---
887: Lainand-----	---	---	---	---	0	---
Blint-----	Lithic bedrock	20-40	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
889: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
890: Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
890: Tanksel-----	Lithic bedrock	20-40	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
891: Tanksel-----	Lithic bedrock	20-40	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
892: Palerf-----	Lithic bedrock	25-40	---	Indurated	0	---
Rubble land-----	---	---	---	---	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
893: Rubble land-----	---	---	---	---	0	---
Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
894: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	---
Clerf-----	Lithic bedrock	20-40	---	Indurated	0	---
Wipple-----	Lithic bedrock	40-60	---	Indurated	0	---
896: Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	---
897: Nanum, flooded-----	---	---	---	---	---	---
898: Shinn-----	Lithic bedrock	4-10	---	Indurated	0	---
Laufer-----	Lithic bedrock	10-20	---	Indurated	---	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
898: Nint-----	Lithic bedrock	In 20-40	In ---	In Indurated	In 0	In ---
899: Bedron-----	---	---	---	---	---	---
Nint-----	Lithic bedrock	20-40	---	Indurated	0	---
900: Deedale, flooded-----	---	---	---	---	0	High
901: Niben-----	---	---	---	---	0	Moderate
Vantage-----	Lithic bedrock	11-20	---	Indurated	0	Moderate
Benwy-----	Duripan	40-60	4-17	Indurated	0	Moderate
902: Patron-----	---	---	---	---	0	Moderate
Camaspach-----	Lithic bedrock	12-20	---	Indurated	0	Moderate
903: Marlic-----	Lithic bedrock	12-20	---	Indurated	0	Moderate
Zen-----	Lithic bedrock	20-40	---	Indurated	0	Moderate
Laric-----	Lithic bedrock	5-12	---	Indurated	0	Moderate
905: Vantage-----	Lithic bedrock	11-20	---	Indurated	0	Moderate
Niben-----	---	---	---	---	0	Moderate
Clerf-----	Lithic bedrock	20-40	---	Indurated	0	Moderate
906: Levnik-----	Lithic bedrock	12-20	---	Indurated	0	Low
Nosser-----	Lithic bedrock	20-40	---	Indurated	0	Low
Nevo-----	Lithic bedrock	5-10	---	Indurated	0	Low

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		<i>In</i>	<i>In</i>		<i>In</i>	<i>In</i>
910: Winchester-----	---	---	---	---	0	---
Sagehill-----	---	---	---	---	0	---
Burbank-----	---	---	---	---	0	---
911: Sagehill-----	---	---	---	---	0	---
Burbank-----	---	---	---	---	0	---
Malaga-----	Strongly contrasting textural stratification	15-28	---	Noncemented	0	---
914: Disage-----	Lithic bedrock	10-20	---	Indurated	0	---
Clenage-----	Lithic bedrock	20-40	---	Indurated	0	---
915: Nosser-----	Lithic bedrock	20-40	---	Indurated	0	---
Levnik-----	Lithic bedrock	12-20	---	Indurated	0	---
916: Nosser-----	Lithic bedrock	20-40	---	Indurated	0	---
Levnik-----	Lithic bedrock	12-20	---	Indurated	0	---
917: Nevo-----	Lithic bedrock	5-10	---	Indurated	0	---
920: Esquatzel-----	---	---	---	---	0	---
Aqualls-----	Strongly contrasting textural stratification	10-20	---	Noncemented	0	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
920: Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
						Low
921: Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
						High
Nevo-----	Lithic bedrock	5-10	---	Indurated	0	---
						Low
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	---
						None
922: Drino-----	Lithic bedrock	20-40	---	Indurated	0	---
						Low
Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	---
						High
923: Timmerman-----	Strongly contrasting textural stratification	13-37	---	Noncemented	0	---
						Low
Sagehill-----	---	---	---	---	0	---
						Low
924: Malaga, stony sandy loam-----	Strongly contrasting textural stratification	15-28	---	Noncemented	0	---
						Low
927: Disage-----	Lithic bedrock	10-20	---	Indurated	0	---
						Low
Sohappy-----	Lithic bedrock	50-60	---	Indurated	0	---
						Low
Clenage-----	Lithic bedrock	20-40	---	Indurated	0	---
						Low
928: Mozen-----	Lithic bedrock	20-40	---	Indurated	---	---
						Moderate
Argabak-----	Lithic bedrock	5-12	---	Indurated	0	---
						Moderate
Yrtneg-----	Lithic bedrock	12-20	---	Indurated	0	---
						Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial Total	
		In	In		In	In
929: Neviot-----	---	---	---	---	---	Moderate
Palerf-----	Lithic bedrock	25-40	---	Indurated	0	Moderate
Rubble land-----	---	---	---	---	0	---
932: Volinger-----	---	---	---	---	---	Moderate
Mozen-----	Lithic bedrock	20-40	---	Indurated	---	Moderate
933: Mozen-----	Lithic bedrock	20-40	---	Indurated	---	Moderate
Volinger-----	---	---	---	---	---	Moderate
Yrtneg-----	Lithic bedrock	12-20	---	Indurated	0	Moderate
936: Shushuskin-----	Lithic bedrock	20-40	---	Indurated	0	Moderate
Pachneum-----	---	---	---	---	0	Moderate
Shinn-----	Lithic bedrock	4-10	---	Indurated	0	Moderate
940: Renslow-----	---	---	---	---	0	High
941: Renslow-----	---	---	---	---	0	High
944: Rubble land-----	---	---	---	---	0	---
Fortyday-----	Lithic bedrock	14-20	---	Indurated	0	High
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	None
948: Hardmauk-----	Dense material	45-60	---	Noncemented	0	Moderate
Teanaway-----	---	---	---	---	0	Moderate
954: Esquatzel-----	---	---	---	---	0	Moderate

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial	Total
		In	In		In	In
955: Esquatzel-----	---	---	---	---	0	---
Weirman-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
Weirman, very cobbly sandy loam-----	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
957: Kayak, rarely flooded--	Strongly contrasting textural stratification	20-40	---	Noncemented	0	---
Weirman, rarely flooded	Strongly contrasting textural stratification	3-18	---	Noncemented	0	---
958: Grinrod-----	Lithic bedrock	20-40	---	Indurated	0	---
Horseflat-----	Lithic bedrock	12-20	---	Indurated	0	---
960: Winchester-----	---	---	---	---	0	---
Burbank-----	---	---	---	---	0	---
Malaga-----	Strongly contrasting textural stratification	15-28	---	Noncemented	0	---
963: Dumps, landfill-----	---	---	---	---	---	---
966: Ellisforde-----	---	---	---	---	---	---

Table 12.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action
	Kind	Depth to top	Thickness	Hardness	Initial Total	
		In	In		In	In
980: Rock Creek-----	Lithic bedrock	8-20	---	Indurated	---	Moderate
981: Taneum-----	---	---	---	---	---	Moderate
1006: Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	None
Rubble land-----	---	---	---	---	0	---
Glaciers, icefields----	---	---	---	---	0	None
1007: Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	None
Andic Humicryods-----	Lithic bedrock	20-40	---	Indurated	0	Moderate
1441: Teanaway-----	---	---	---	---	0	Moderate
6710: McDaniel-----	---	---	---	---	0	Moderate
DAM: Dam-----	---	---	---	---	---	---
W: Water-----	---	---	---	---	---	---

Soil Survey of Kittitas County Area, Washington

Table 13.--Taxonomic Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Ackna-----	Loamy-skeletal, mixed, superactive, mesic Vitritorrandic Argixerolls
Ainsley-----	Clayey-skeletal, isotic Andic HaplocryalFs
Ampad-----	Coarse-loamy, isotic, frigid Vitrandic Dystroxerepts
Anatone-----	Loamy-skeletal, mixed, superactive, frigid Lithic Haploxerolls
Andic Dystrocryepts-----	Andic Dystrocryepts
Andic Dystroxerepts-----	Andic Dystroxerepts
Andic Haplocryods-----	Andic Haplocryods
Andic Humicryods-----	Andic Humicryods
Aquolls-----	Aquolls
Argabak-----	Loamy-skeletal, mixed, superactive, mesic Lithic Argixerolls
Argixerolls-----	Argixerolls
Bearrun-----	Fine, mixed, active, frigid Vitrandic Palexeralfs
Bedron-----	Fine, smectitic, mesic Vitrandic Argixerolls
Benwy-----	Fine-loamy, mixed, superactive, mesic Calciargidic Argixerolls
Bertolotti-----	Loamy-skeletal, isotic, frigid Andic Dystroxerepts
Blint-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls
Bocker-----	Loamy-skeletal, mixed, superactive, frigid Lithic Haploxerolls
Bograp-----	Fine-loamy, isotic, frigid Vitrandic Palexeralfs
Brickmill-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Haploxerolls
Brisky-----	Loamy-skeletal, mixed, superactive, mesic Lithic Ultic Haploxerolls
Brysill-----	Loamy-skeletal, mixed, superactive, mesic Vitritorrandic Argixerolls
Burbank-----	Sandy-skeletal, mixed, mesic Xeric Torriorthents
Caliralls-----	Fine-loamy, mixed, superactive, mesic Calciargidic Argixerolls
Camaspach-----	Clayey-skeletal, smectitic, mesic Lithic Argixerolls
Chapot-----	Loamy-skeletal, mixed, superactive, frigid Ultic Haploxeralfs
Cheviot-----	Loamy-skeletal, mixed, superactive, mesic Aridic Haploxerolls
Chinkmin-----	Medial-skeletal, amorphous Andic Duricryods
Cleman-----	Coarse-loamy, mixed, superactive, mesic Torrifluventic Haploxerolls
Clenage-----	Clayey-skeletal, smectitic, mesic Xeric Haplargids
Clerf-----	Clayey-skeletal, smectitic, mesic Aridic Palexerolls
Cliffdell-----	Loamy-skeletal, isotic, frigid Andic Dystroxerepts
Cowiche-----	Fine-loamy, mixed, superactive, mesic Aridic Argixerolls
Cryaquepts-----	Cryaquepts
Cryofluvents-----	Cryofluvents
Cryorthents-----	Cryorthents
Cumulic Haploxerolls-----	Cumulic Haploxerolls
Currier-----	Ashy-skeletal over loamy-skeletal, amorphous over isotic Typic Vitricryands
Darland-----	Loamy-skeletal, isotic Vitrandic Haplocryolls
Deedale-----	Fine, smectitic, mesic Xeric Endoaquerts
Deroux-----	Loamy-skeletal, isotic, frigid Andic Dystroxerepts
Disage-----	Clayey-skeletal, smectitic, mesic Lithic Xeric Haplargids
Domerie-----	Ashy-skeletal, amorphous Typic Vitricryands
Drino-----	Loamy-skeletal, mixed, superactive, mesic Xeric Haplargids
Drysel-----	Fine-loamy, mixed, superactive, mesic Xeric Argidurids
Durixerolls-----	Durixerolls
Durtash-----	Clayey-skeletal, smectitic, mesic, shallow Abruptic Argiduridic Durixerolls
Dystrocryepts-----	Dystrocryepts
Dystroxerepts-----	Dystroxerepts
Elkheights-----	Fine-loamy, mixed, superactive, mesic Ultic Argixerolls
Ellisforde-----	Coarse-silty, mixed, superactive, mesic Calcicidic Haploxerolls
Esmeralda-----	Ashy-skeletal, amorphous Typic Vitricryands
Esquatzel-----	Coarse-silty, mixed, superactive, mesic Torrifluventic Haploxerolls
Fluvaquents-----	Fluvaquents
Fortyday-----	Loamy-skeletal, mixed, superactive, mesic Lithic Xeric Haplargids
Ganis-----	Loamy, isotic Lithic Haplocryolls
Gilpar-----	Ashy-skeletal, amorphous Andic Haplocryods
Grinrod-----	Loamy-skeletal, mixed, superactive, mesic Aridic Argixerolls
Hakker-----	Clayey-skeletal, mixed, superactive, frigid Aquultic Argixerolls
Haplosaprists-----	Haplosaprists

Soil Survey of Kittitas County Area, Washington

Table 13.--Taxonomic Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Haploxerolls-----	Haploxerolls
Hardmauk-----	Fine-loamy, mixed, superactive, frigid Aquic Haploxeralfs
Haywire-----	Medial-skeletal over loamy-skeletal, amorphic over isotic Andic Humicryods
Horseflat-----	Loamy-skeletal, mixed, superactive, mesic Lithic Argixerolls
Jimek-----	Ashy-skeletal, amorphic Typic Vitricryands
Jummer-----	Loamy-skeletal, isotic, frigid Vitrandic Haploxeralfs
Junpe-----	Loamy-skeletal, isotic, frigid Vitrandic Haploxerepts
Jumpmore-----	Loamy-skeletal, isotic, frigid Vitrandic Palexeralfs
Kachess-----	Ashy-skeletal, amorphic Andic Haplocryods
Kafing-----	Fine-loamy, isotic, frigid Vitrandic Dystroxerepts
Kaner-----	Ashy-skeletal over loamy-skeletal, amorphic over isotic Humic Vitricryands
Kayak-----	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Aquandic Endoaquolls
Keechelus-----	Clayey-skeletal, mixed, superactive, frigid Ultic Palexeralfs
Kiona-----	Loamy-skeletal, mixed, superactive, mesic Xeric Haplocambids
Kiper-----	Coarse-loamy, isotic, frigid Vitrandic Dystroxerepts
Kladnick-----	Sandy-skeletal, isotic, frigid Andic Dystroxerepts
Lablue-----	Clayey, smectitic, mesic, shallow Haplic Durixerolls
Lainand-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls
Laric-----	Loamy, mixed, superactive, mesic Lithic Argixerolls
Laufer-----	Clayey-skeletal, smectitic, mesic Lithic Argixerolls
Lemah-----	Ashy-skeletal, amorphic Typic Vitricryands
Levnik-----	Clayey, smectitic, mesic Lithic Xeric Haplargids
Loneridge-----	Clayey-skeletal, isotic, frigid Vitrandic Palexeralfs
Madrak-----	Ashy-skeletal, glassy Xeric Vitricryands
Malaga-----	Sandy-skeletal, mixed, mesic Xeric Haplocambids
Manastash-----	Fine, smectitic, mesic Abruptic Argiduridic Durixerolls
Marlic-----	Loamy, mixed, superactive, mesic Lithic Argixerolls
Maxhill-----	Clayey-skeletal, smectitic, mesic Vitrandic Argixerolls
McDaniel-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls
Meloza-----	Fine, smectitic, mesic Torrtic Argixerolls
Mendian-----	Fine-loamy, mixed, superactive, mesic Ultic Argixerolls
Metmill-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Haploxerolls
Metser-----	Fine, smectitic, mesic Aquic Haploxererts
Meystre-----	Fine-loamy, mixed, superactive, mesic Ultic Argixerolls
Millhouse-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls
Mippon-----	Sandy-skeletal, mixed, frigid Fluventic Haploxerolls
Mitta-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Modsel-----	Clayey-skeletal, smectitic, mesic Vitrandic Argixerolls
Mozen-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Myzel-----	Fine-loamy, isotic, frigid Vitrandic Haploxerolls
Nack-----	Loamy-skeletal, mixed, superactive, mesic Pachic Palexerolls
Nanum-----	Fine-loamy, mixed, superactive, mesic Vitrandic Haploxerolls
Nard-----	Fine-loamy, isotic, frigid Vitrandic Haploxeralfs
Natkim-----	Ashy-skeletal, glassy, frigid Typic Vitrixerands
Naxing-----	Ashy over loamy-skeletal, glassy over isotic Xeric Vitricryands
Neviot-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Haploxerolls
Nevo-----	Loamy-skeletal, mixed, superactive, mesic Lithic Xeric Haplargids
Niben-----	Fine-loamy, mixed, superactive, mesic Calcic Pachic Argixerolls
Nimue-----	Loamy-skeletal, isotic Andic Haplocryods
Nint-----	Loamy-skeletal, mixed, superactive, mesic Vitrandic Argixerolls
Nitcha-----	Fine-loamy, mixed, superactive, mesic Vitrandic Haploxerolls
Nitzel-----	Fine-loamy, isotic, mesic Vitrandic Haploxerolls
Nosal-----	Fine-loamy, mixed, superactive, mesic Aquandic Endoaquolls
Nosser-----	Fine-loamy, mixed, superactive, mesic Xeric Haplargids
Odo-----	Fine-loamy, mixed, superactive, mesic Typic Haploxerolls
Opnish-----	Fine, mixed, superactive, mesic Vitrandic Argixerolls
Osborn-----	Coarse-loamy, isotic, frigid Andic Dystroxerepts
Pachneum-----	Fine-loamy, mixed, superactive, mesic Vitrandic Haploxerolls
Palerf-----	Clayey-skeletal, smectitic, mesic Vitrandic Palexerolls
Patnish-----	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Vitrandic Haploxerolls
Patron-----	Fine, smectitic, mesic Vitrandic Palexerolls

Soil Survey of Kittitas County Area, Washington

Table 13.--Taxonomic Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Polallie-----	Ashy-skeletal, amorphic Andic Haplocryods
Qualla-----	Fine-silty, mixed, superactive, mesic Oxyaquic Argixerolls
Quicksell-----	Fine, mixed, superactive, mesic Xeric Argialbolls
Racker-----	Sandy-skeletal, isotic, mesic Andic Dystroxerepts
Ralock-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Reelow-----	Clayey, smectitic, mesic, shallow Haplic Durixerolls
Reeser-----	Fine, smectitic, mesic Vitrandic Durixerolls
Renslow-----	Coarse-silty, mixed, superactive, mesic Calciargidic Argixerolls
Rock Creek-----	Clayey-skeletal, smectitic, mesic Lithic Mollic Haploxeralfs
Rollinger-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Ronsel-----	Ashy-skeletal, amorphic Andic Haplocryods
Roslyn-----	Coarse-loamy, isotic, frigid Andic Dystroxerepts
Roxer-----	Loamy-skeletal, isotic, frigid Andic Dystroxerepts
Sagehill-----	Coarse-loamy, mixed, superactive, mesic Xeric Haplocalcids
Sapkin-----	Loamy-skeletal, mixed, superactive, frigid Ultic Argixerolls
Saydab-----	Ashy-skeletal, mixed Oxyaquic Vitricryands
Scotties-----	Loamy-skeletal, isotic, frigid Andic Dystroxerepts
Selah-----	Fine-loamy, mixed, superactive, mesic Argiduridic Durixerolls
Shinn-----	Loamy-skeletal, mixed, superactive, mesic Lithic Ultic Argixerolls
Shushuskin-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Sketter-----	Clayey-skeletal, smectitic, mesic Vitrandic Durixerolls
*Sohappy-----	Coarse-loamy, mixed, superactive, mesic Xeric Haplocalcids
Spexarth-----	Ashy over loamy, glassy over isotic Typic Vitricryands
Standup-----	Loamy-skeletal, mixed, superactive, frigid Typic Dystroxerepts
Stemilt-----	Loamy-skeletal, isotic, frigid Vitrandic Argixerolls
Stilgar-----	Ashy-skeletal, amorphic Humic Vitricryands
Stirrup-----	Medial-skeletal over loamy-skeletal, amorphic over isotic Andic Humicryods
Sutkin-----	Loamy-skeletal, mixed, superactive, frigid Ultic Haploxerolls
Swauk-----	Fine, mixed, superactive, mesic Ultic Palexerolls
Tanaha-----	Fine-loamy, mixed, superactive, mesic Vitrandic Durixerolls
Taneum-----	Fine-loamy, mixed, superactive, mesic Typic Argixerolls
Tanksel-----	Clayey-skeletal, smectitic, mesic Vitrandic Argixerolls
Teanaway-----	Fine-loamy, mixed, superactive, frigid Haplic Palexeralfs
Tekison-----	Clayey-skeletal, smectitic, mesic Ultic Palexerolls
Terence-----	Ashy-skeletal, glassy Xeric Vitricryands
Terlan-----	Loamy, mixed, superactive, mesic, shallow Argiduridic Durixerolls
Thetis-----	Ashy-skeletal, amorphic Spodic Vitricryands
Thiessen-----	Clayey-skeletal, smectitic, mesic Pachic Argixerolls
Timmerman-----	Sandy, mixed, mesic Xeric Haplocambids
Umtanum-----	Fine, mixed, superactive, mesic Vitrandic Argixerolls
Vabus-----	Ashy-skeletal, amorphic Andic Haplocryods
Vanderbilt-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Vanepps-----	Loamy-skeletal, magnesian Andic Dystrocryepts
Vantage-----	Clayey-skeletal, smectitic, mesic Lithic Argixerolls
Varodale-----	Fine, smectitic, mesic Aquic Haploxererts
Vitricryands-----	Vitricryands
Volinger-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Volperie-----	Coarse-loamy, isotic, frigid Andic Dystroxerepts
Weirman-----	Sandy-skeletal, mixed, mesic Torrifluventic Haploxerolls
Whiskeydick-----	Clayey-skeletal, smectitic, mesic Typic Palexerolls
Winchester-----	Mixed, mesic Xeric Torripsamments
Windry-----	Loamy-skeletal, mixed, superactive, mesic Lithic Argixerolls
Wipple-----	Clayey-skeletal, smectitic, mesic Aridic Palexerolls
Wockum-----	Fine-loamy, mixed, superactive, mesic Vitrandic Argixerolls
Woldale-----	Fine, mixed, superactive, mesic Typic Endoaquolls
Xerofluvents-----	Xerofluvents
Yahne-----	Clayey-skeletal, isotic, frigid Andic Palexeralfs
Yrtneg-----	Loamy, mixed, superactive, mesic Lithic Argixerolls
Zen-----	Fine-loamy, mixed, superactive, mesic Calciargidic Argixerolls
Zillah-----	Coarse-silty, mixed, superactive, mesic Fluvaquentic Endoaquolls

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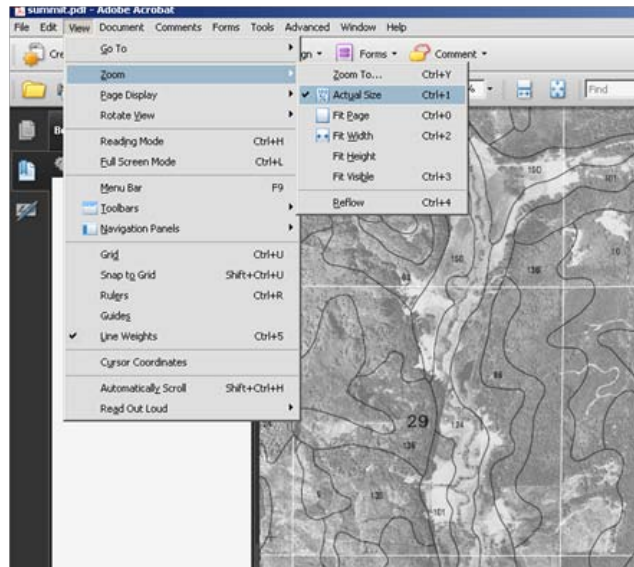
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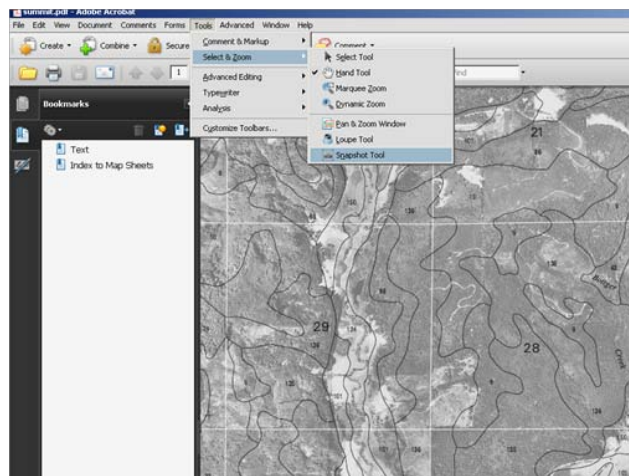
Printing Soil Survey Maps

The soil survey maps were developed at a scale of 1:24,000 and are intended to be used at that scale. Many common print options, such as “Shrink to Printable Area,” will distort the map scale on the printed page. To minimize this distortion, deselect these auto-format options before printing. (Note: The following instructions refer to Adobe Reader 9.2.0 Standard Edition.)

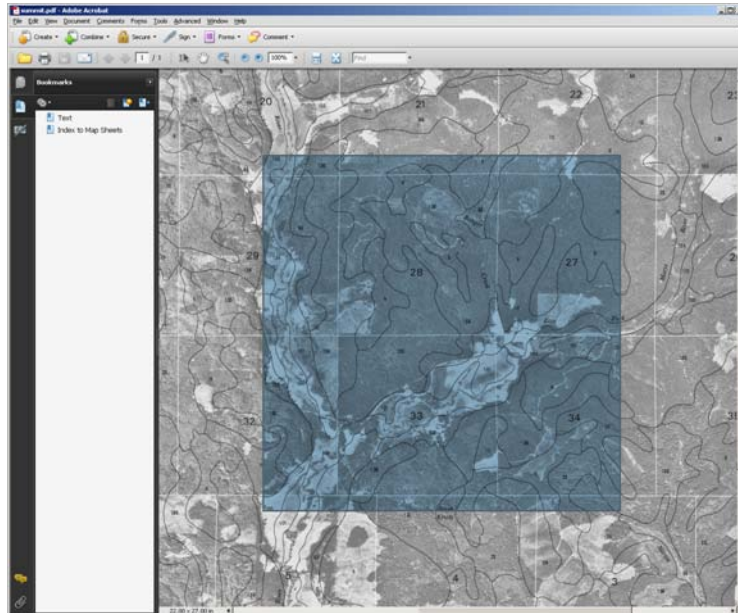
Set the view to Actual Size from the View pull-down menu.



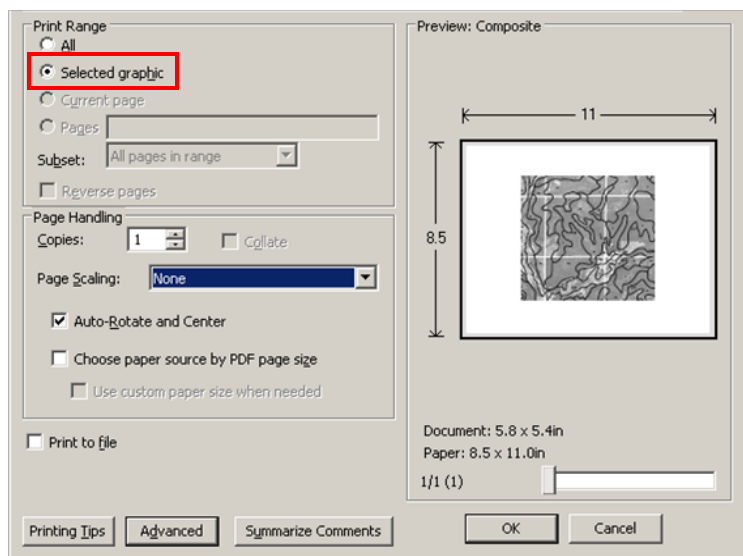
Using the Pan tool, navigate to the area you would like to print. Then select the Snapshot tool from the Tools menu.



Left-click and drag to create a box covering your area of interest.

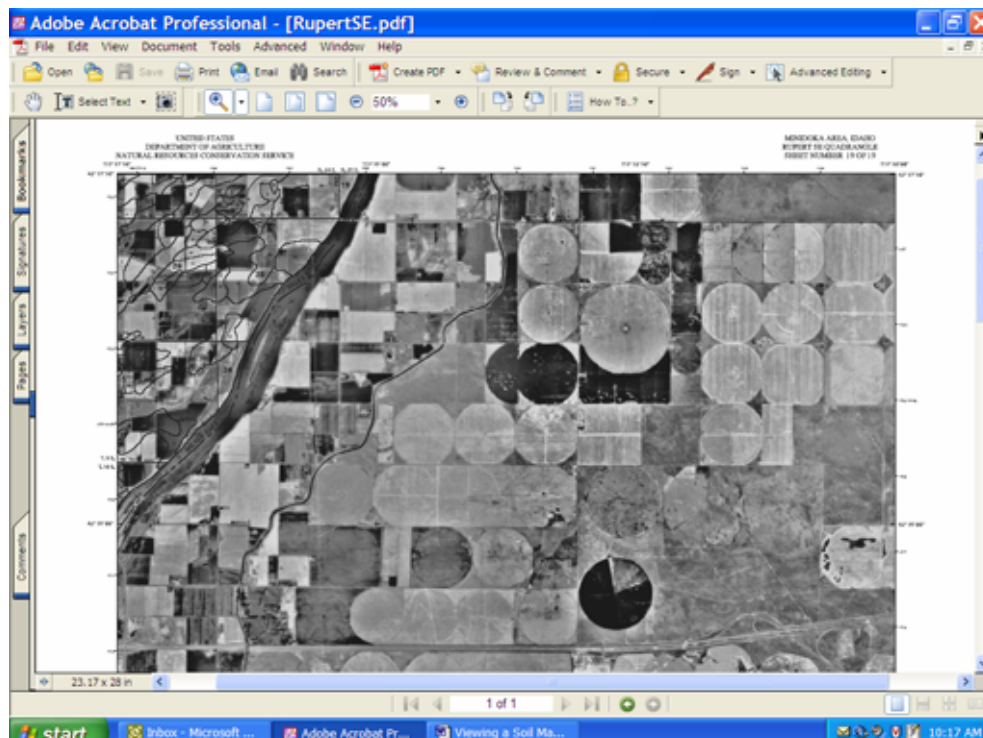
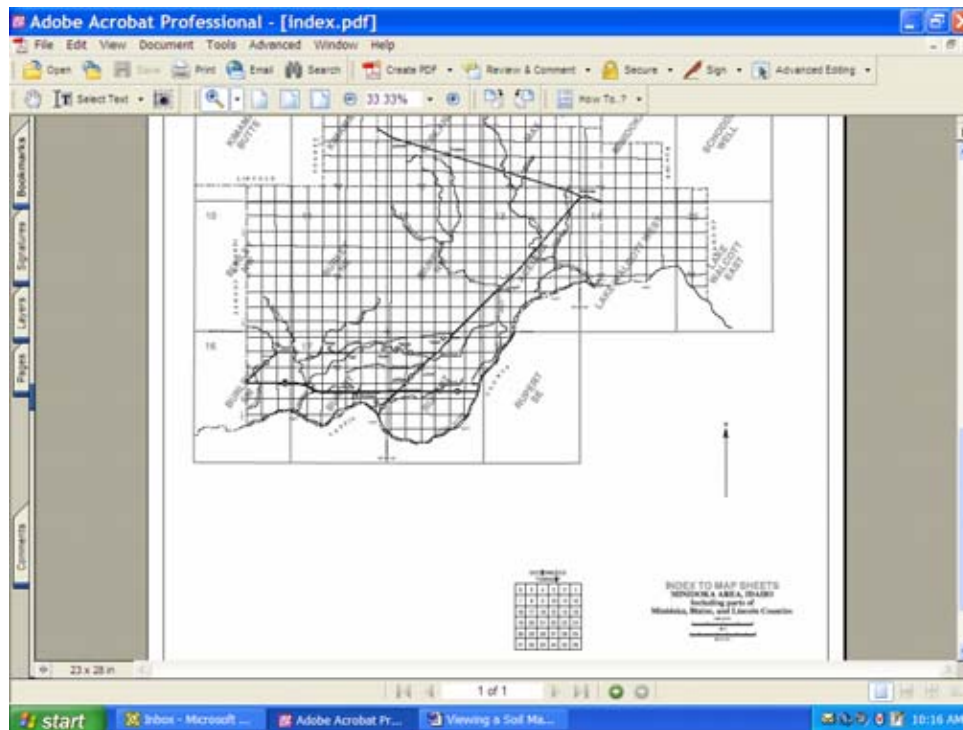


Verify that the Print Range is set to “Selected Graphic” and that Page Scaling is set to “None.” Click OK.

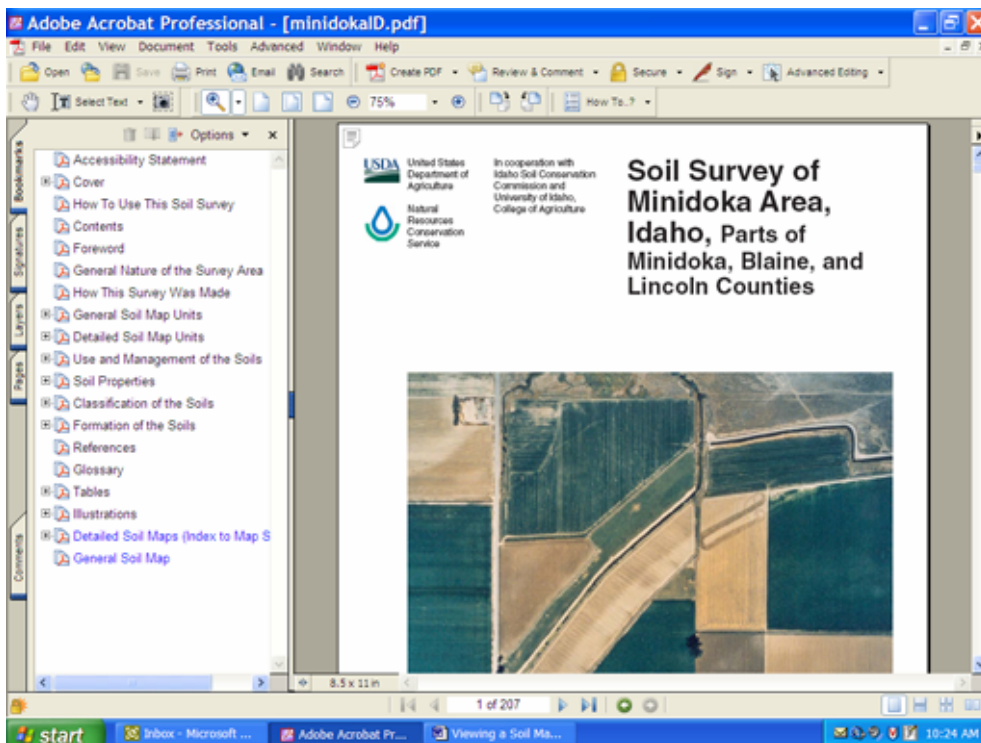
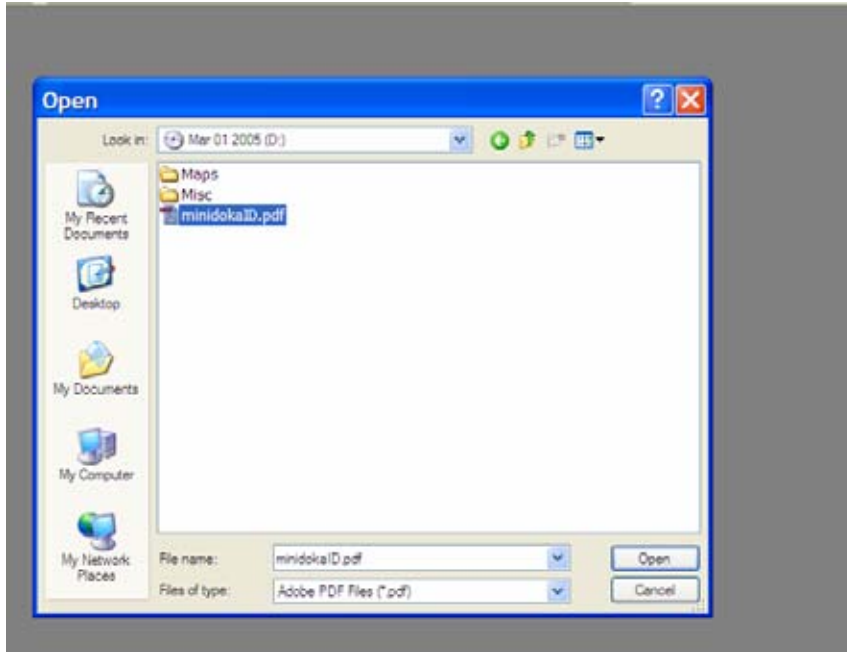


Viewing a Soil Map and Corresponding Map Unit Descriptions at the Same Time

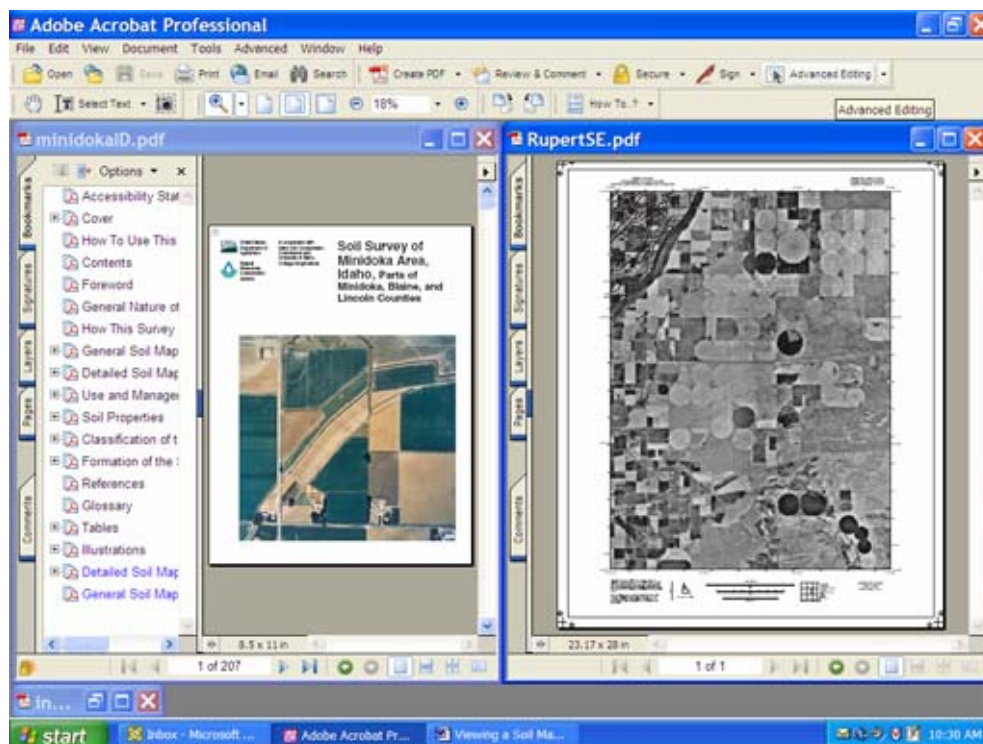
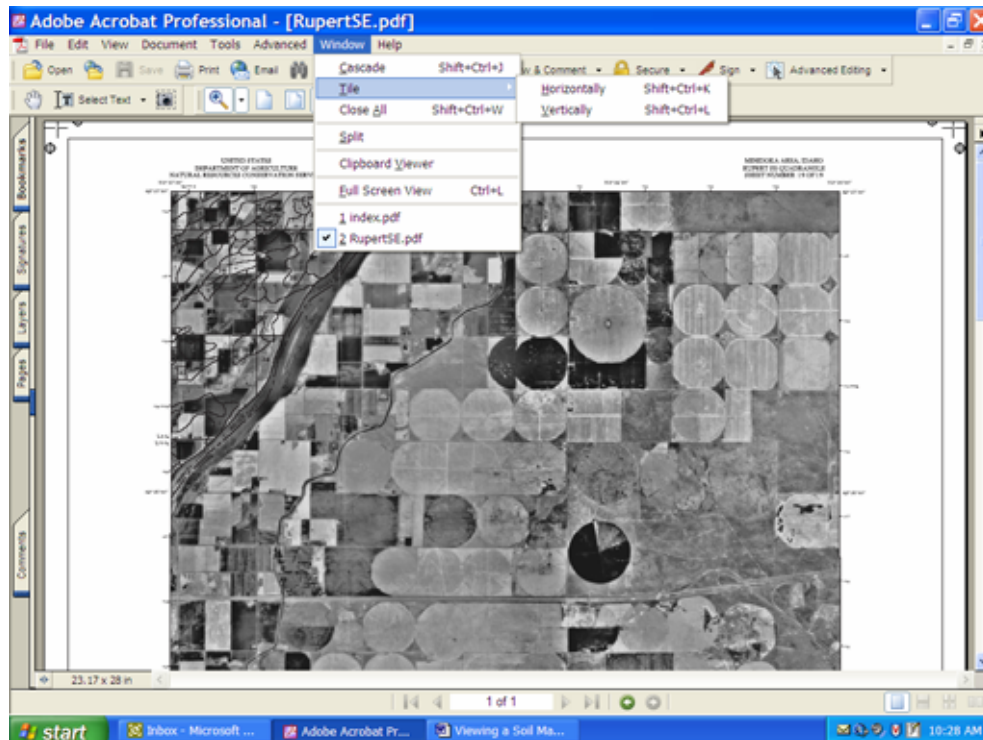
Open a soil map by clicking on a quadrangle on the Index to Map Sheets.



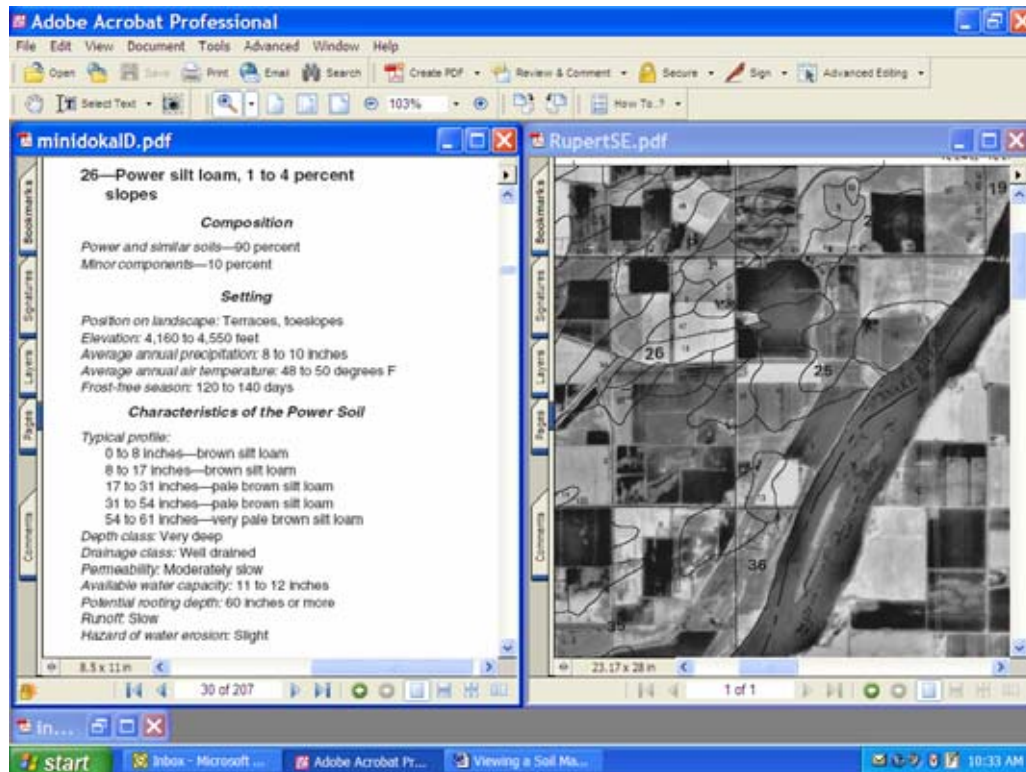
Open the manuscript pdf file.



Select Tile, Vertically or Horizontally from the Window menu to view both the manuscript and the soil map.



Pan or zoom to your area of interest in the soil map window. Select a map unit description from the bookmarks in the manuscript window.



Soil Survey of Kittitas County Area, Washington

CD-ROM 2010

Welcome! This CD contains information about the soils of Kittitas County Area, Washington. Click on a subject of interest or browse the CD to view the files.

Soil Survey Manuscript

This document contains general information about the survey area, the general and detailed soil map unit descriptions, the taxonomic unit descriptions, and the soil interpretation and soil properties tables.

General Soil Map

The general soil map shows the survey area divided into groups of associated soils called [general soil map units](#). This map is useful for planning the use and management of large areas. Click on the general soil map unit names in the legend to view the map unit descriptions.

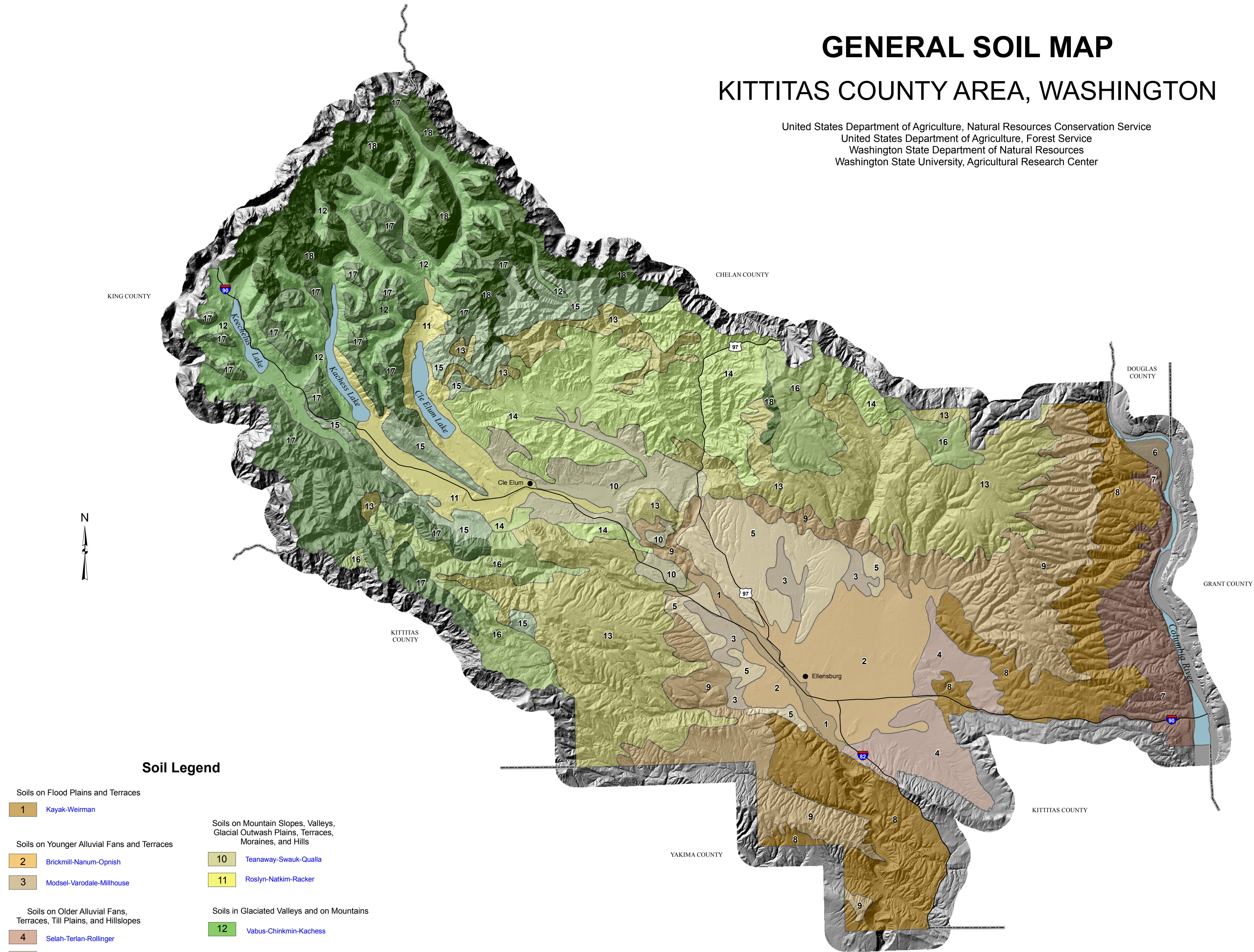
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas. From the Index to Map Sheets, click on any quadrangle to view the soil delineations and map unit symbols in the survey area. For instructions on printing the maps, [click here](#). For instructions on split-screen viewing, [click here](#).

GENERAL SOIL MAP

KITTITAS COUNTY AREA, WASHINGTON

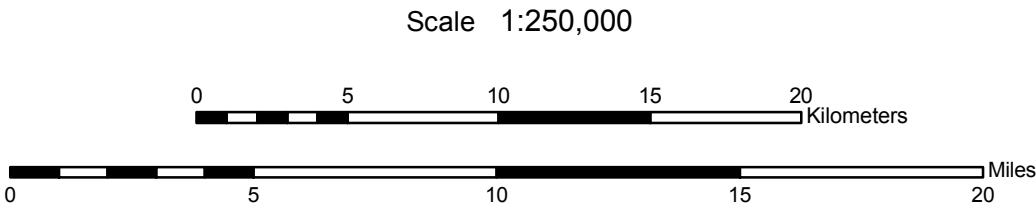
United States Department of Agriculture, Natural Resources Conservation Service
United States Department of Agriculture, Forest Service
Washington State Department of Natural Resources
Washington State University, Agricultural Research Center



Soil Legend

- Soils on Flood Plains and Terraces
- 1 Kayak-Weirman
- Soils on Younger Alluvial Fans and Terraces
- 2 Brickmill-Narum-Opnish
 - 3 Modsel-Varodale-Millhouse
- Soils on Older Alluvial Fans, Terraces, Till Plains, and Hillslopes
- 4 Selah-Tertan-Rollinger
 - 5 Reeser-Reelow-Sketter
- Soils on Columbia River Terraces
- 6 Malaga
- Soils on Columbia and Yakima River Canyonlands
- 7 Fortyday-Disage-Nevo
 - 8 Vantage-Clerf-Argabak
 - 9 Camaspatch-Laufer-Shinn
- Soils on Mountain Slopes, Valleys, Glacial Outwash Plains, Terraces, Moraines, and Hills
- 10 Teanaway-Swauk-Qualla
 - 11 Roslyn-Natkin-Racker
- Soils in Glaciated Valleys and on Mountains
- 12 Vabus-Chinkmin-Kachess
- Soils on Mountains
- 13 Jumpe-Loneridge-Bocker
 - 14 Nard-Ampad-Kiper
 - 15 Roxer-Deroux-Andic Dystrocrepts
 - 16 Naxing-Saydab-Madrak
 - 17 Nimue-Domerie-Currier
 - 18 Andic Dystrocrepts, avalanche chutes-Rock outcrop-Andic Haplocryods

The units on this legend are described in the text under the heading "General Soil Map Units" Compiled 2010

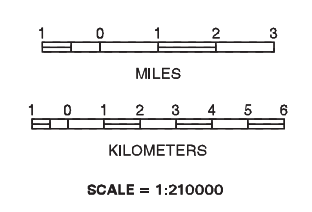




120°00'00"

SECTIONALIZED TOWNSHIP											
6	5	4	3	2	1						
7	8	9	10	11	12						
18	17	16	15	14	13						
19	20	21	22	23	24						
30	29	28	27	26	25						
31	32	33	34	35	36						

INDEX TO MAP SHEETS
KITITITAS COUNTY AREA, WASHINGTON



NAME

Swauk loam, 5 to 15 percent slopes	
Swauk loam, 15 to 30 percent slopes	
Swauk-Qualla complex, 5 to 15 percent slopes	
Qualla loam, 0 to 5 percent slopes	
Qualla loam, 5 to 15 percent slopes	
Swauk loam, 0 to 5 percent slopes	
Swauk-Qualla complex, 15 to 30 percent slopes	
Nesal ashy silt loam, 0 to 2 percent slopes	
Vanderbilt ashy loam, 0 to 2 percent slopes	
Meister clay loam, 2 to 5 percent slopes	
Durash cobbly loam, 2 to 5 percent slopes	
Reelov-Reeser-Skeiter complex, 2 to 10 percent slopes	
Wetmill very gravely ashy loam, 0 to 5 percent slopes	
Reelov ashy clay loam, 2 to 5 percent slopes	
Durash loam, 2 to 5 percent slopes	
Nint-McDaniel-Rubble land complex, 30 to 75 percent slopes	
Shim-Rubble land-Shushukin complex, 5 to 15 percent slopes	
Swauk-Elkhights-Labue complex, 3 to 15 percent slopes	
Shim-Pachneum-Nint complex, 5 to 15 percent slopes	
Lauder-Triessen complex, 5 to 15 percent slopes	
Millhouse very cobbly ashy loam, 0 to 5 percent slopes	
Reelov very cobbly ashy loam, clayey subsoil, 3 to 15 percent slopes	
Reelov-Reeser-Labue complex, 3 to 10 percent slopes	
Weirman complex, drained, 0 to 5 percent slopes	
Millhouse-Meister complex, 0 to 5 percent slopes	
Skeiter-Millhouse-Labue complex, 0 to 5 percent slopes	
Elkhights-Swauk complex, 5 to 15 percent slopes	
Labue-Stetter-Reelov complex, 3 to 15 percent slopes	
Reeser-Skeiter-Weirman complex, 3 to 15 percent slopes	
Maxhill ashy loam, 0 to 5 percent slopes	
Nint-Rubble land-Rock outcrop complex, 30 to 75 percent slopes	
Nint complex, landslide, 15 to 45 percent slopes	
Patron complex, 15 to 45 percent slopes	
Elkhights-Qualla complex, 5 to 15 percent slopes	
Weirman-Kayak complex, 0 to 5 percent slopes	
Nint-McDaniel-Lauder complex, 30 to 60 percent slopes	
Maxhill very cobbly ashy loam, 0 to 5 percent slopes	
Patler-Ralock-Vanage complex, 30 to 70 percent slopes	
Camaspach-Rubble land-Winskydyck complex, 30 to 70 percent slopes	
Lainand-Blint-Rubble land, 30 to 70 percent slopes	
Vanage-Patler-Rubble land complex, 30 to 75 percent slopes	
Camaspach-Tanksee-Rubble land complex, 45 to 75 percent slopes	
Tanksee-Rubble land-Rock outcrop complex, 30 to 70 percent slopes	
Patler-Rubble land-Rock outcrop complex, 30 to 70 percent slopes	
Rubble land-Camaspach-Rock outcrop complex, 30 to 70 percent slopes	
Vanage-Clerf-Wipple complex, 15 to 30 percent slopes	
Agabak-Camaspach complex, 3 to 15 percent slopes	
Annum ashy loam, flooded, 0 to 2 percent slopes	
Shim-Lauder-Nint complex, 3 to 15 percent slopes	
Bedron Nint complex, 15 to 45 percent slopes	
Deedle clay loam, flooded, 0 to 2 percent slopes	
Niben-Vantage-Bermy complex, 15 to 30 percent slopes	
Patron-Camaspach complex, 15 to 30 percent slopes	
Maric-Zen-Latic complex, 3 to 15 percent slopes	
Vanage-Niben-Clerf complex, 3 to 15 percent slopes	
Levink-Nosser-Nevo complex, 3 to 15 percent slopes	
Winchester-Sagehill-Burbank complex, 5 to 30 percent slopes	
Sagehill-Burbank-Malaga complex, 30 to 60 percent slopes	
Disage-Clerage complex, 15 to 30 percent slopes	
Nosser-Levink complex, 3 to 15 percent slopes	
Nosser-Levink complex, 15 to 30 percent slopes	
Nevo extremely gravely sandy loam, 3 to 15 percent slopes	
Esquatzel-Aquolis-Weirman complex, 0 to 5 percent slopes	
Fortyday-Nevo-Rock outcrop complex, 3 to 15 percent slopes	
Drino-Fortyday complex, 3 to 15 percent slopes	
Sagehill-Timmerman complex, 3 to 15 percent slopes	
Malaga stony sandy loam, 3 to 15 percent slopes	
Disage-Sohappy-Clerage complex, 15 to 30 percent slopes	
Mozen-Ytneg-Agabak complex, 15 to 30 percent north slopes	
Nevo-Patler-Rubble land complex, 30 to 75 percent slopes	
Volinger-Mozen complex, 15 to 30 percent slopes	
Mozen-Volinger-Ytneg complex, 5 to 15 percent slopes	
Shushukin-Pachneum-Shim complex, 3 to 15 percent north slopes	
Renlow silt loam, 5 to 10 percent slopes	
Renlow silt loam, 10 to 15 percent slopes	
Rubble land-Fortyday-Rock outcrop complex, 40 to 90 percent slopes	
Hardmark-Teanaway complex, 25 to 50 percent slopes	
Esquatzel silt loam, 0 to 2 percent slopes	
Esquatzel-Weirman complex, 0 to 2 percent slopes	
Kayak-Weirman complex, rarely flooded, 0 to 2 percent slopes	
Grimod-Horseshat complex, 45 to 60 percent slopes	
Winchester-Burbank-Malaga complex, 30 to 60 percent slopes	
Dumps, landfill	
Ellisforde silt loam, 8 to 15 percent slopes	
Rock Creek very stony silt loam, 0 to 30 percent slopes	
Taneum loam, 5 to 15 percent slopes	
Rock outcrop-Rubble land-glaciers, icefields complex, 30 to 90 percent slopes	
Rock outcrop-Andic Humicypods complex, 30 to 90 percent slopes	
Teanaway ashy loam, 10 to 25 percent slopes	
McDaniel very stony ashy loam, 3 to 30 percent slopes	
Dam	
Water	

CONVENTIONAL AND SPECIAL
SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES	
National, state, or province	---
County or parish	----
Minor civil division	-----
Reservation (national forest or park, state forest or park)	=====
Land grant	=====
Limit of soil survey (label) and/or denied access area	=====
Field sheet matchline and nealline	=====
Previously published survey	=====
OTHER BOUNDARY	
Airport, airfield	
Cemetery	
City/county park	
STATE COORDINATE TICK	
1 690 000 FEET	
LAND DIVISION CORNER (section and land grants)	
GEOGRAPHIC COORDINATE TICK	
TRANSPORTATION	
Divided roads	=====
Other roads	=====
Trail	-----

ROAD EMBLEMS AND DESIGNATIONS

Interstate	
Federal	
State	
County, farm or ranch	

POWER TRANSMISSION LINE

PIPE LINE	
FENCE	

LEVEES

Without road	
With road	
With railroad	
Single side slope	

DAMS

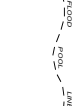
Medium or small	
LANDFORM FEATURES	
Prominent hill or peak	

SPECIAL SYMBOLS FOR SOIL
SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS	
LANDFORM FEATURES	
Bedrock escarpment	
Other than bedrock escarpment	
Short steep slope	
Gully	
Depression, closed	
Sinkhole	
Borrow pit	
Gravel pit	
Mine or quarry	
Landfill	

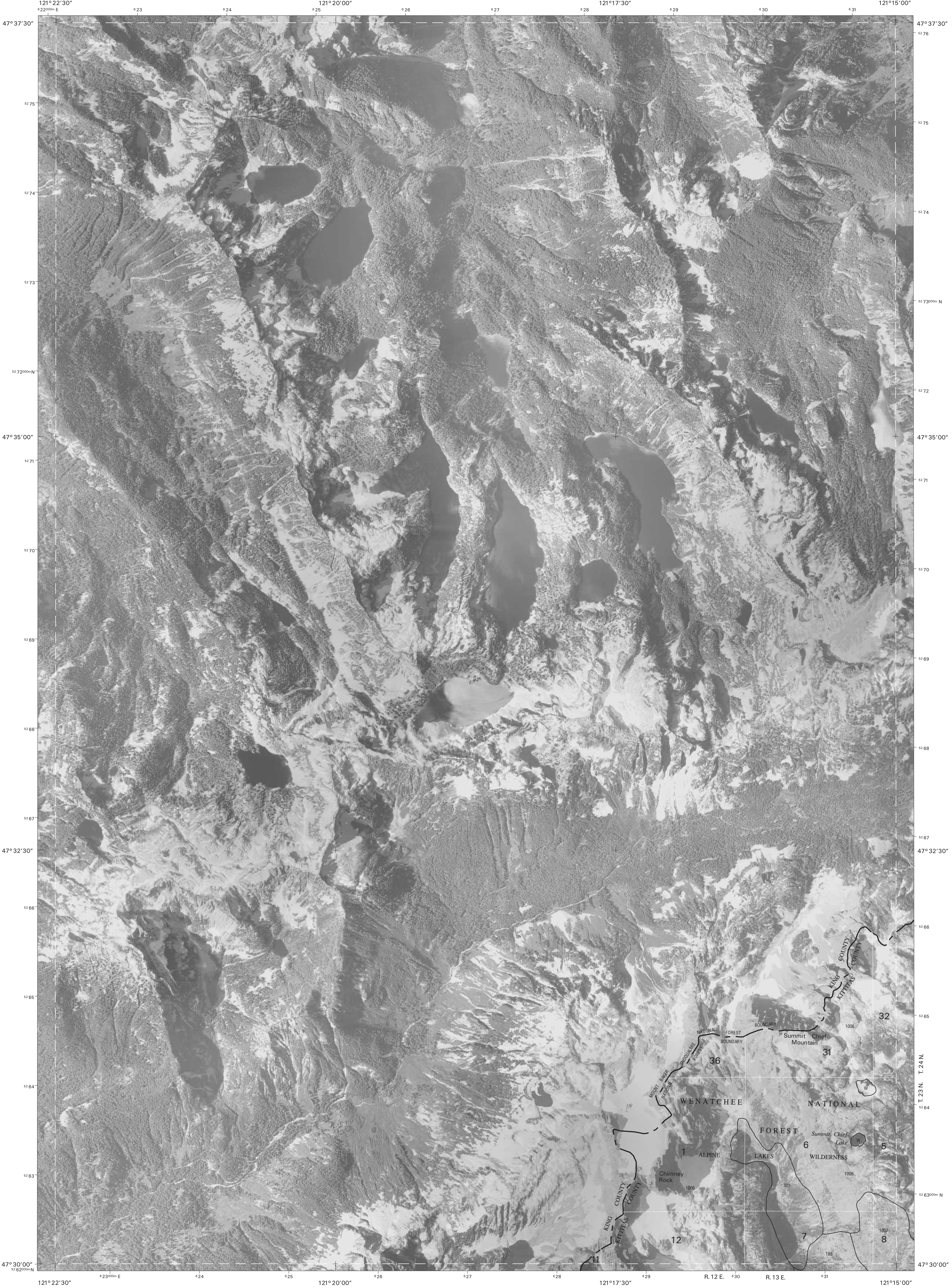
MISCELLANEOUS SURFACE FEATURES

Blowout	
Clay spot	
Gravelly spot	
Lava spot	
Marsh or swamp	
Rock outcrop (includes sandstone and shale)	
Saline spot	
Sandy spot	
Severely eroded spot	
Slide or slip	
Sodic spot	
Spoil area	
Stony spot	
Very stony spot	
Wet spot	



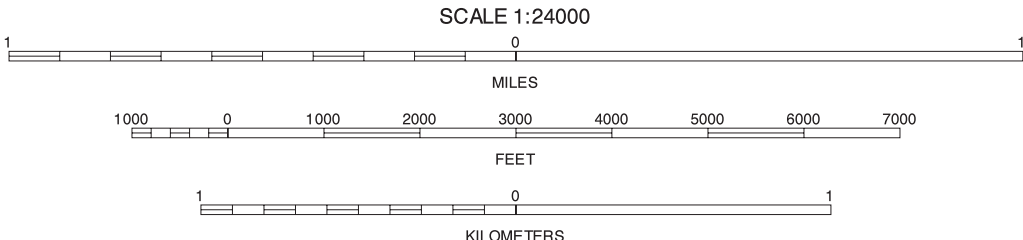
Spring	
Well, artesian	
Well, irrigation	





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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



2	2	2
5	6	7
5	6	7

INDEX TO ADJOINING 7.5 MAPS

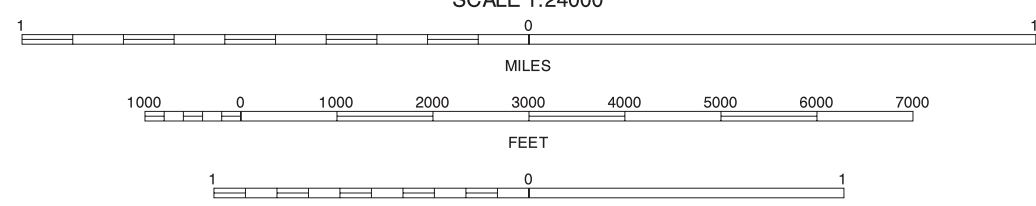
BIG SNOW MOUNTAIN, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 1 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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4		4	JACK RIDGE
9		11	9 MOUNT STUART 11 BLEWETT 16 TEANAWAY BUTTE 17 RED TOP MOUNTAIN 18 LIBERTY
16	17	18	

ENCHANTMENT LAKES, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 10 OF 58

Soil map delineations extending beyond the dashed white quadrangle neartline are for reference only and are included on adjacent map sheets.



Joins sheet 10 Enchantment Lakes

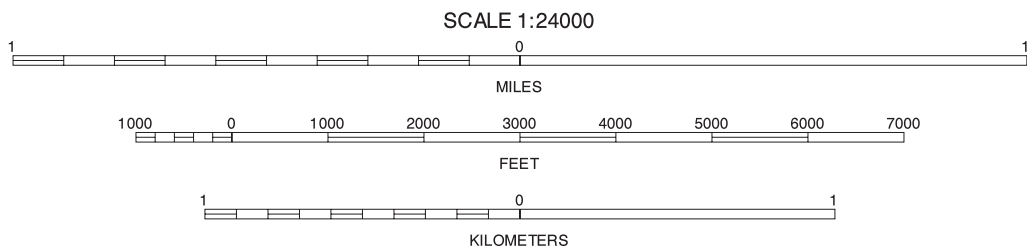
Joins sheet 17
Red Top Mountain

Joins sheet 18 Liberty

Joins sheet 19
Blewett Pass

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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



10	17	18	19
10 ENCHANTMENT LAKES	17 RED TOP MOUNTAIN	18 LIBERTY	19 BLEWETT PASS

INDEX TO ADJOINING 7.5 MAPS

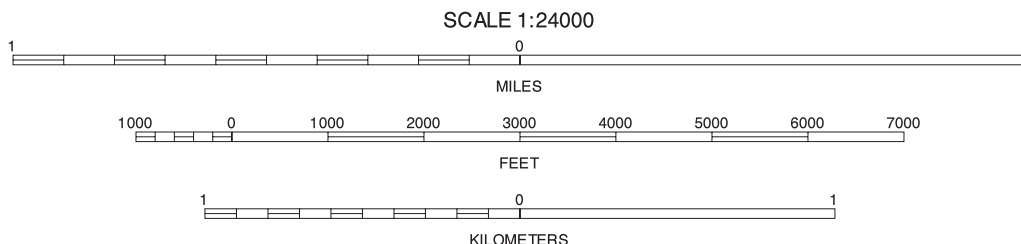
BLEWETT, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 11 OF 58

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North American Datum of 1983 (NAD83). GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



5	6	5 SNOQUALMIE PASS
		6 CHIKAMIN PEAK
	13	13 STAMPEDE PASS
	24	24 BLOWOUT MOUNTAIN

INDEX TO ADJOINING 7.5 MAPS

LOST LAKE, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

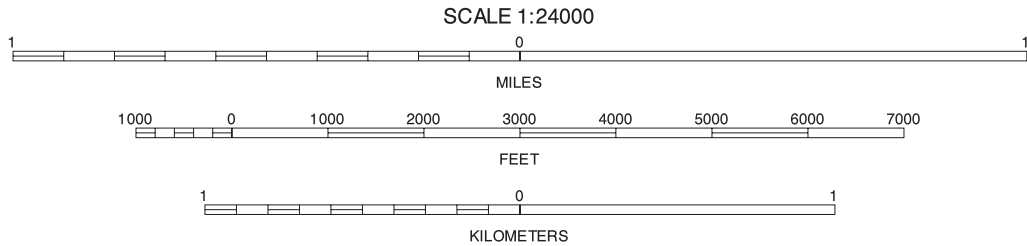


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North American Datum of 1983 (NAD83). GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



5	6	7
12	14	
24	25	

INDEX TO ADJOINING 7.5 MINUTE MAPS

STAMPEDE PASS, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



Joins sheet 13 Stampede Pass

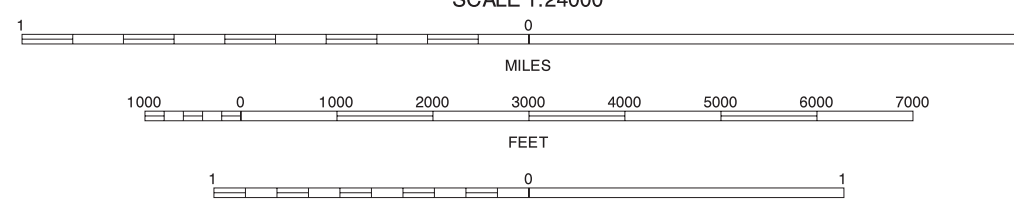
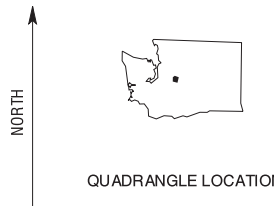
Joins sheet 15 Cle Elum Lake

Joins sheet 24
Blowout Mountain

Joins sheet 26
Ronald

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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

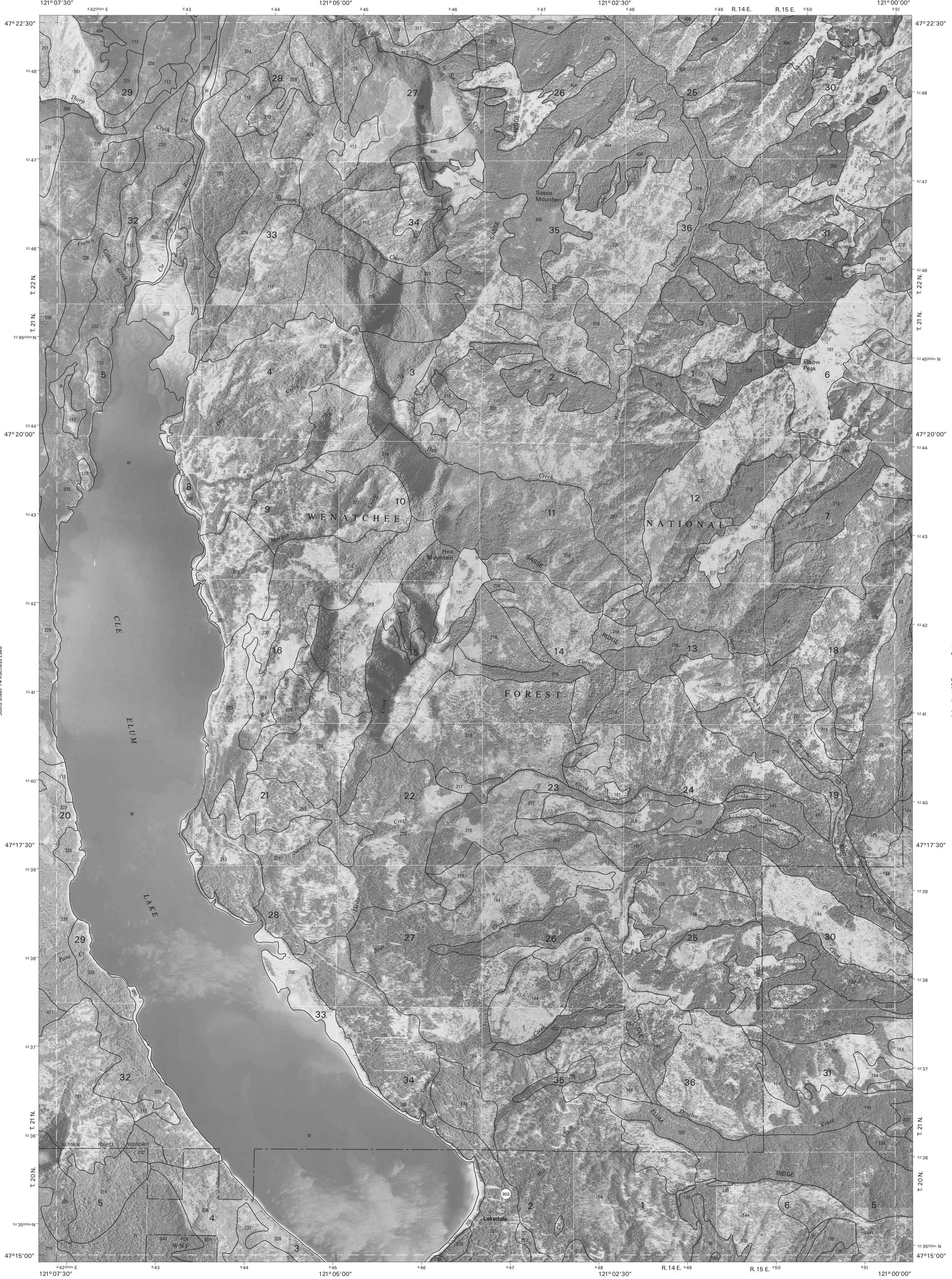


6	7	8
13	14	15
24	25	26

INDEX TO ADJOINING 7.5 MAPS

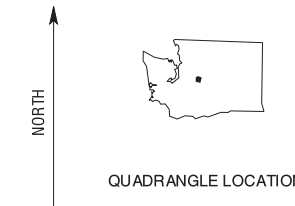
KACHESS LAKE, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 14 OF 58

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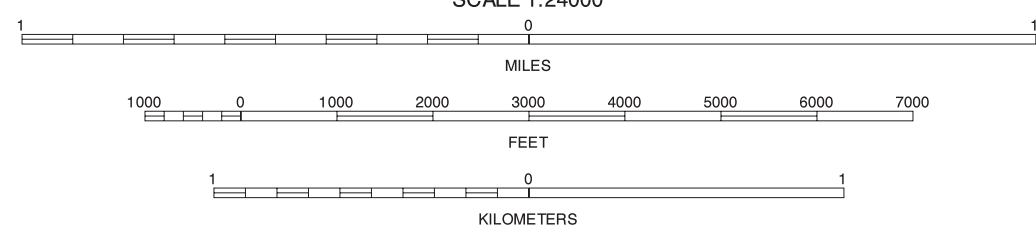


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QUADRANGLE LOCATION



7	8	9
14	15	16
25	26	27

INDEX TO ADJOINING 7.5 MAPS

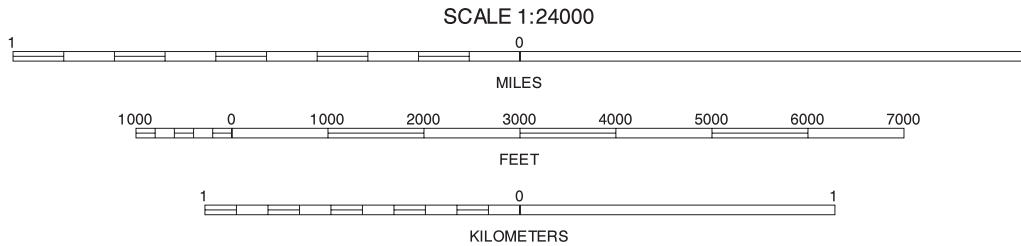
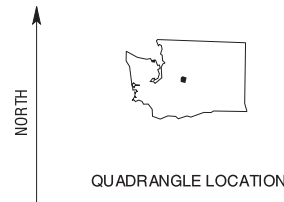
CLE ELUM LAKE, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 15 OF 58

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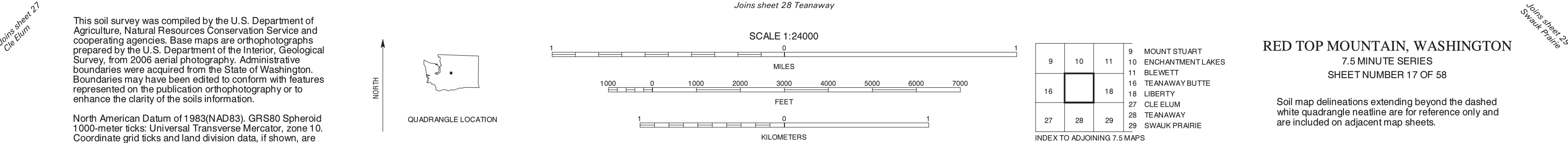
North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10, Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



8	9	10
15	16	17
26	27	28

TEANAWAY BUTTE, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 16 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



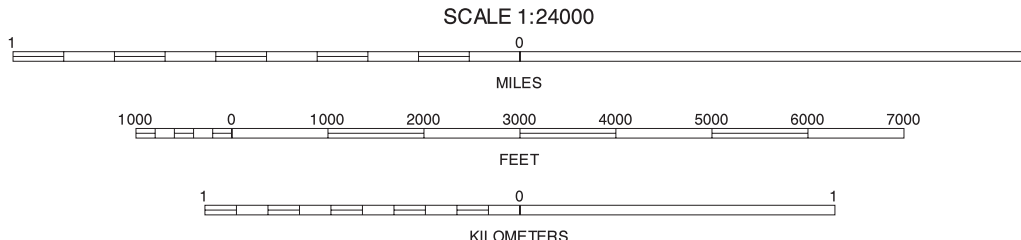


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 2006 aerial photography. Administrative boundaries may have been edited to conform with features represented on the publication orthophotography or to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



10	11	10 ENCHANTMENT LAKES
17	19	11 BLEWETT
28	29	17 RED TOP MOUNTAIN
		19 BLEWETT PASS
		28 TEANAWAY
		29 SWAUK PRAIRIE
		30 REECER CANYON

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SHEET NUMBER 18 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Join sheet 17
Blewett

Join sheet 18 Liberty

Join sheet 29
Swanik Prairie

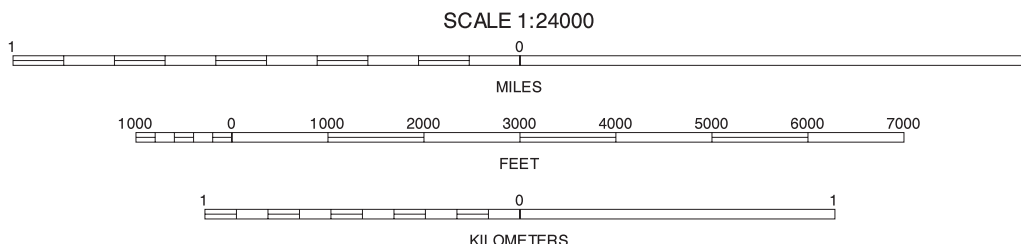
Join sheet 20 Mission Peak

Join sheet 21
Naneum Canyon



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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

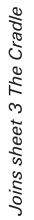


11		11 BLEWETT
18		20
29	30	31

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BLEWETT PASS, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

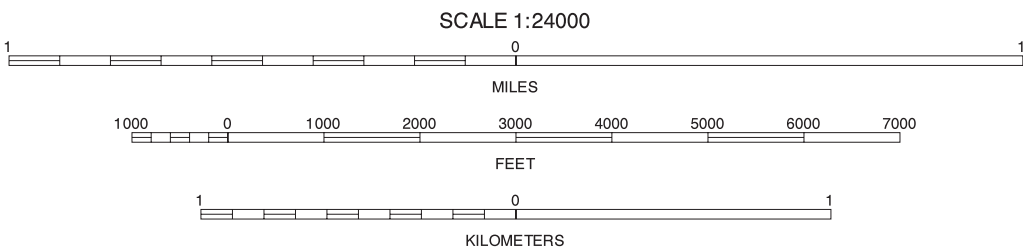


Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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19	21
30	32

19 BLEWETT PASS
21 WENATCHEE HEIGHTS
30 REEGER CANYON
31 NANEUM CANYON
32 COLOLUM PASS

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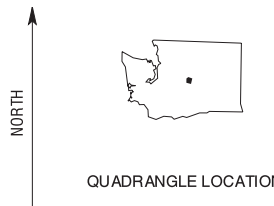
MISSION PEAK, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 20 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

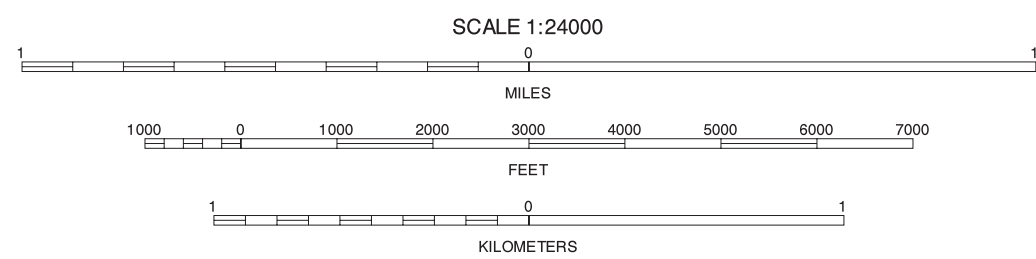


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10, Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



20	22	20 MISSION PEAK
31	32	22 MALAGA
31	32	31 NANEUM CANYON
31	32	32 COLOCKUM PASS
31	32	33 STRAY GULCH

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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



Joins sheet 21 Wenatchee Heights

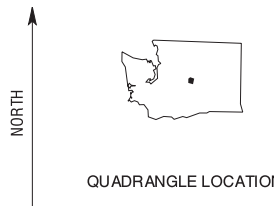
Joins sheet 23 Rock Island Dam

Joins sheet 22 Colocolum Pass

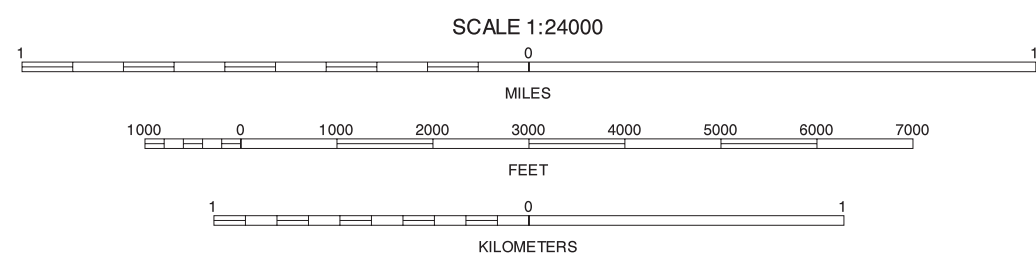
Joins sheet 24 West Bar

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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



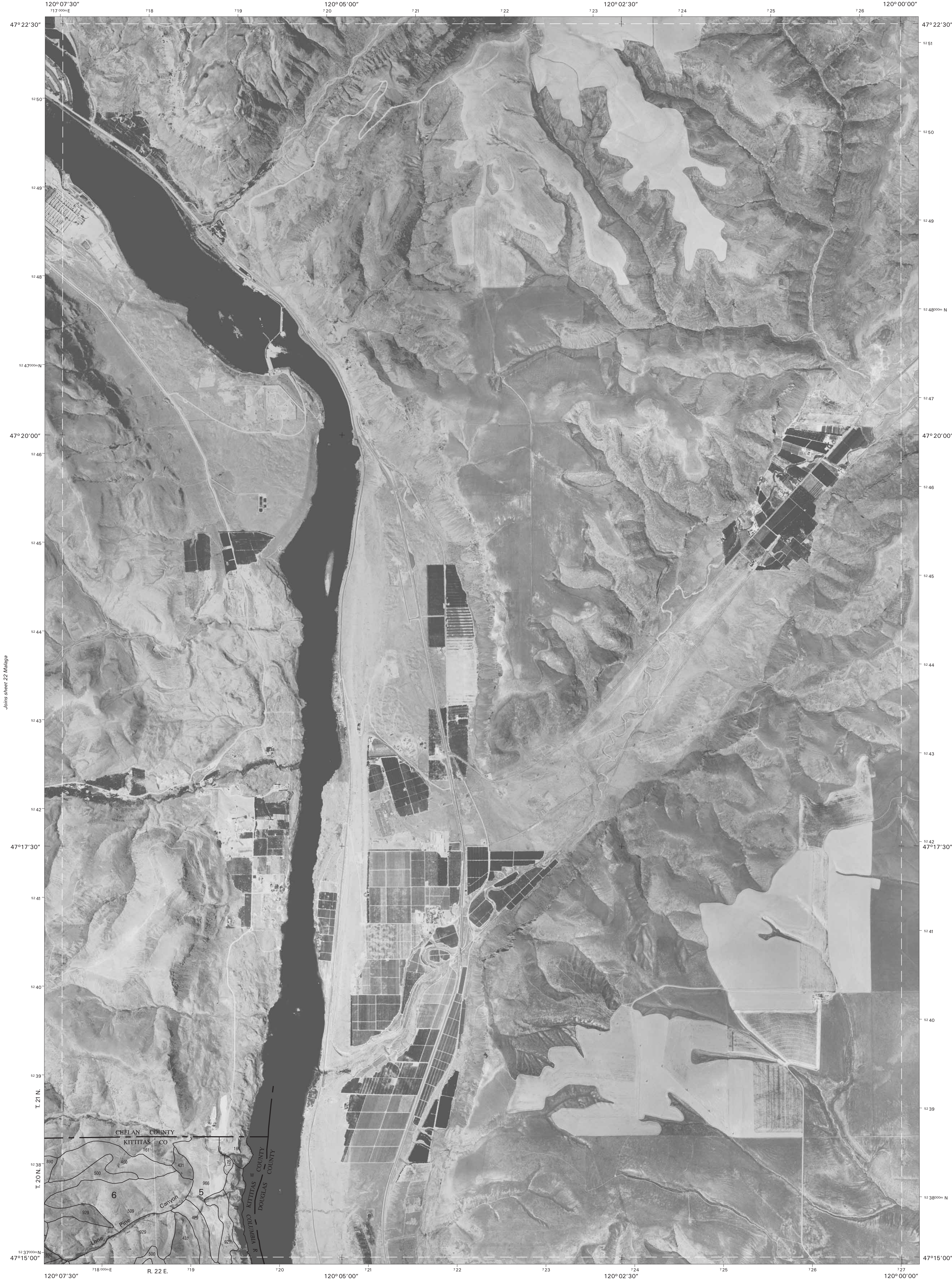
21	23
32	34

- 21 WENATCHEE HEIGHTS
- 23 ROCK ISLAND DAM
- 32 COLOCOLUM PASS
- 33 STRAY GULCH
- 34 WEST BAR

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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

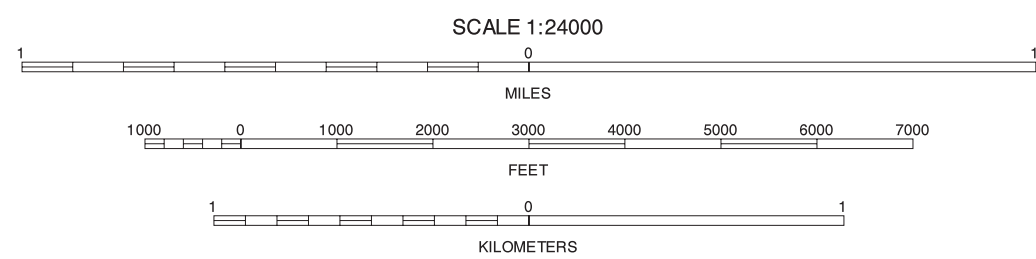
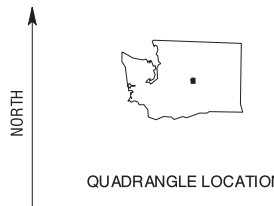


Joins sheet 22 Malaga

Joins sheet 33
Stray Gulch

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22	22 MALAGA
33	33 STRAY GULCH
34	34 WEST BAR

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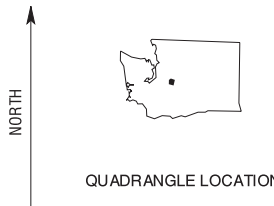
ROCK ISLAND DAM, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 23 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

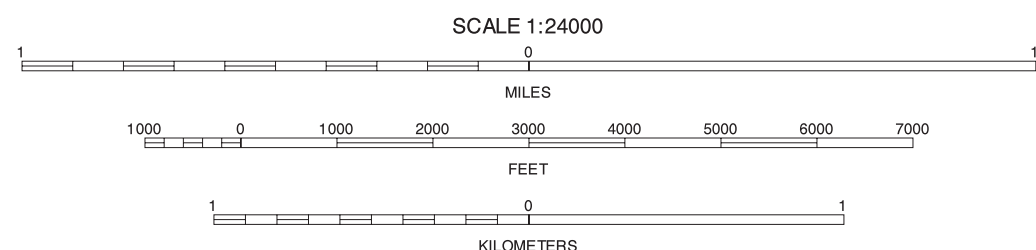


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QUADRANGLE LOCATION

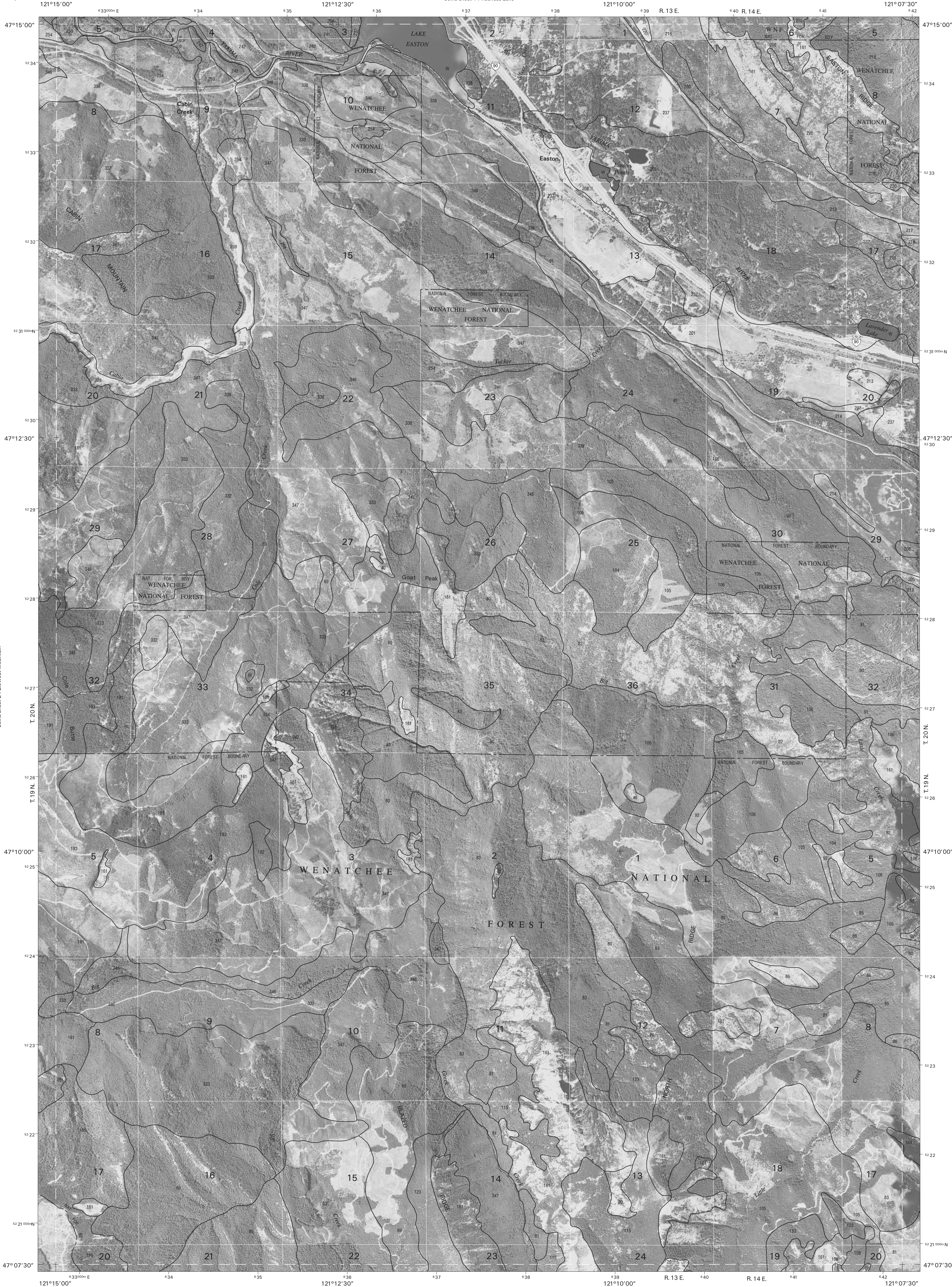


12	13	14	12 LOST LAKE
			13 STAMPEDE PASS
			14 KACHESS LAKE
		25	25 EASTON
		35	35 MOUNT CLIFTY

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BLOWOUT MOUNTAIN, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

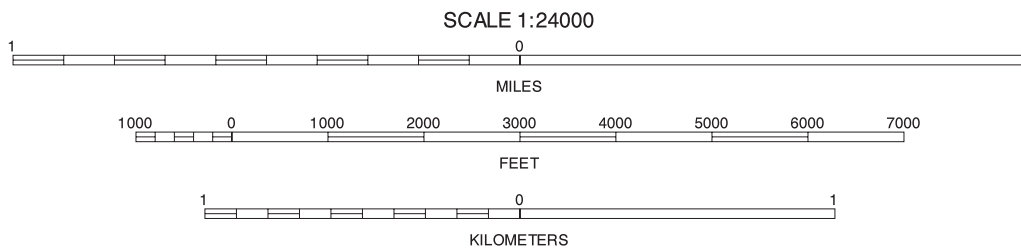


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QUADRANGLE LOCATION



13	14	15	13 STAMPEDE PASS
24	25	26	14 KACHESS LAKE
	35	36	15 CLELUM LAKE
			24 BLOWOUT MOUNTAIN
			26 RONALD
			35 MOUNT CLIFFY
			36 QUARTZ MOUNTAIN

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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

KITTITAS COUNTY AREA, WASHINGTON
RONALD QUADRANGLE
SHEET NUMBER 26 OF 58

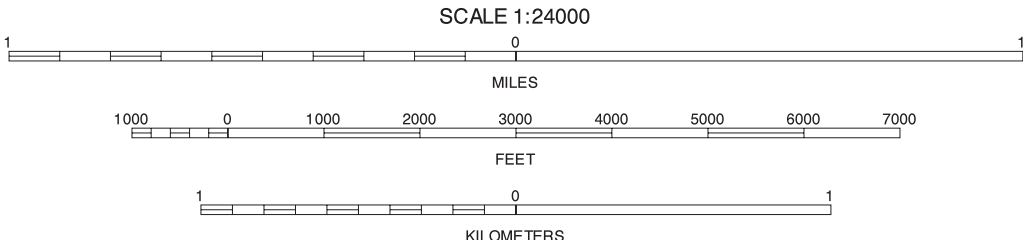


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



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25	27	37
35	36	37

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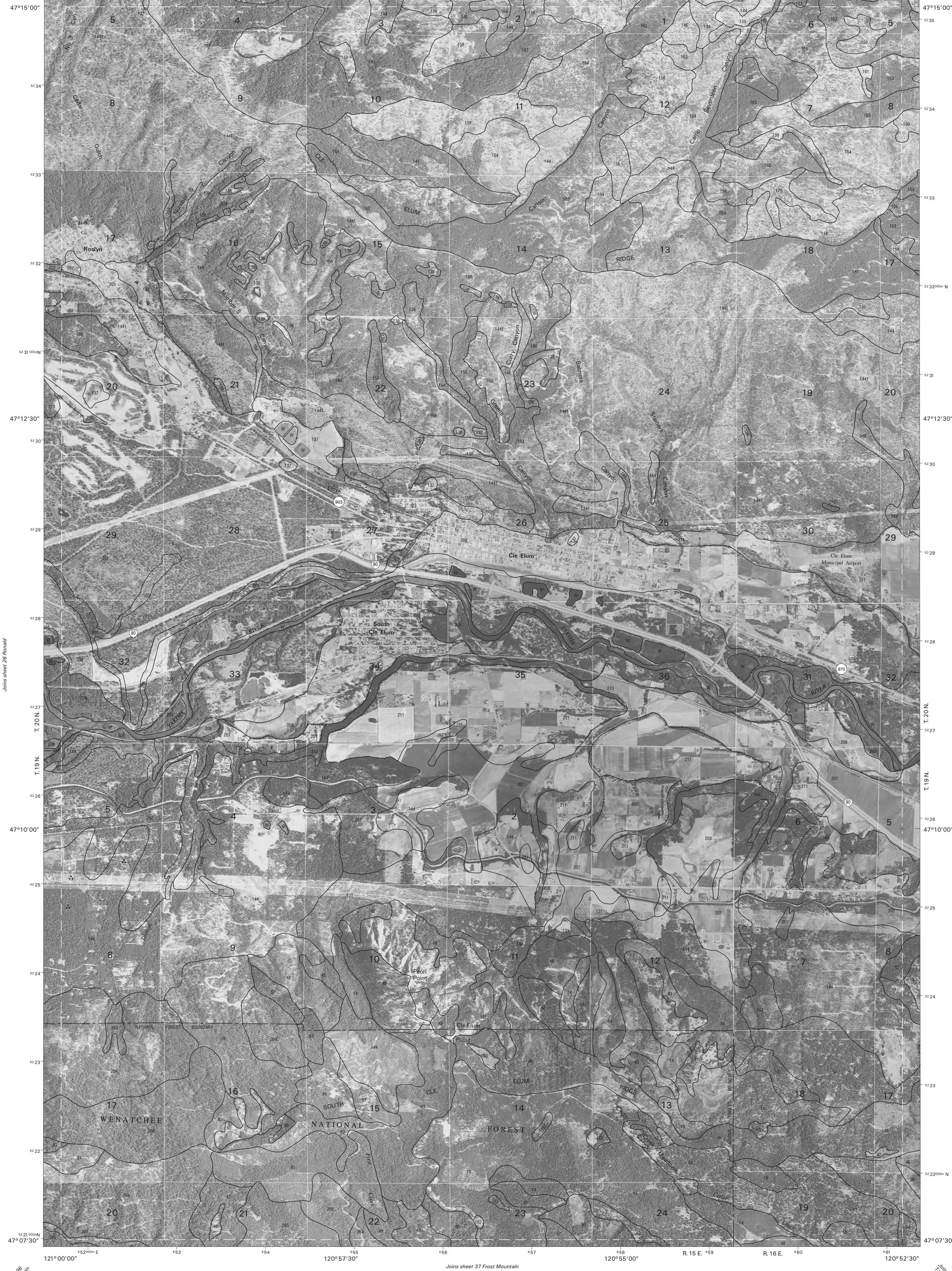
RONALD, WASHINGTON
7.5 MINUTE SERIES
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Soil map delineations extending beyond the dashed white quadrangle nealines are for reference only and are included on adjacent map sheets.

Joins sheet 15
Cle Elum Lake

Joins sheet 16 Teanaway Butte

Joins sheet 17
Red Top Mountain

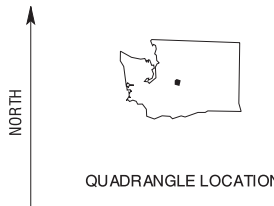


Joins sheet 26 Ronald

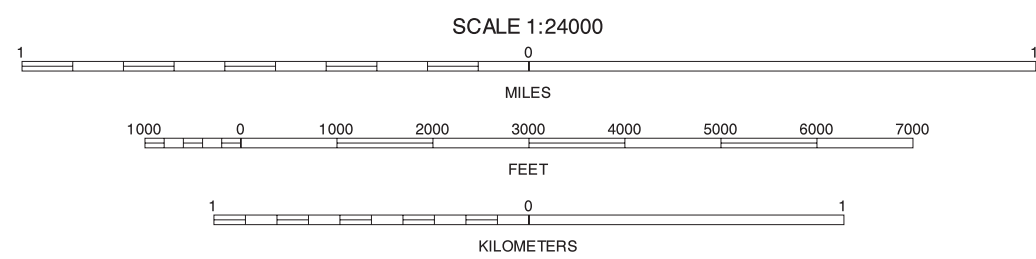
Joins sheet 28 Teanaway

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QUADRANGLE LOCATION



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25	26	27	28
35	36	37	38

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CLE ELUM, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 16
Teaneau Butte

Joins sheet 18
Liberty



Joins sheet 27
Cle Elum

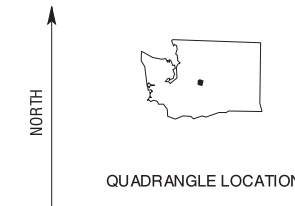
Joins sheet 29
Swanau Prairie

Joins sheet 27
Frost Mountain

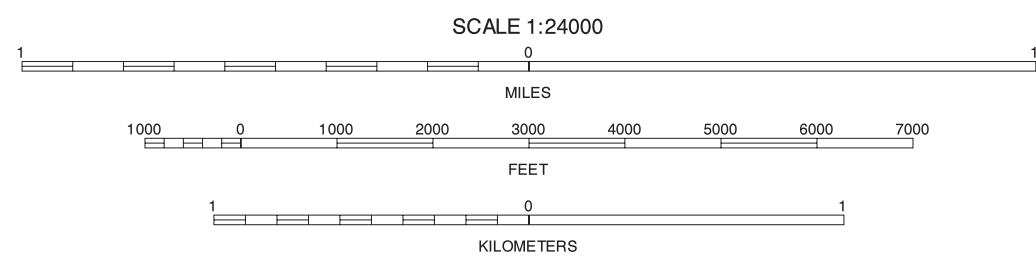
Joins sheet 29
Thorp

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QUADRANGLE LOCATION



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37	38	39

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TEANAWAY, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle neartine are for reference only and are included on adjacent map sheets.

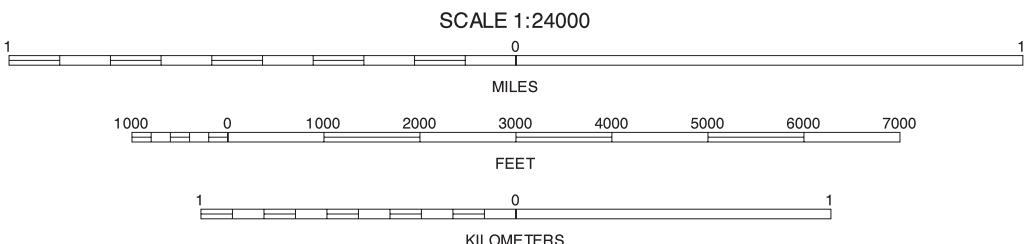


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QUADRANGLE LOCATION

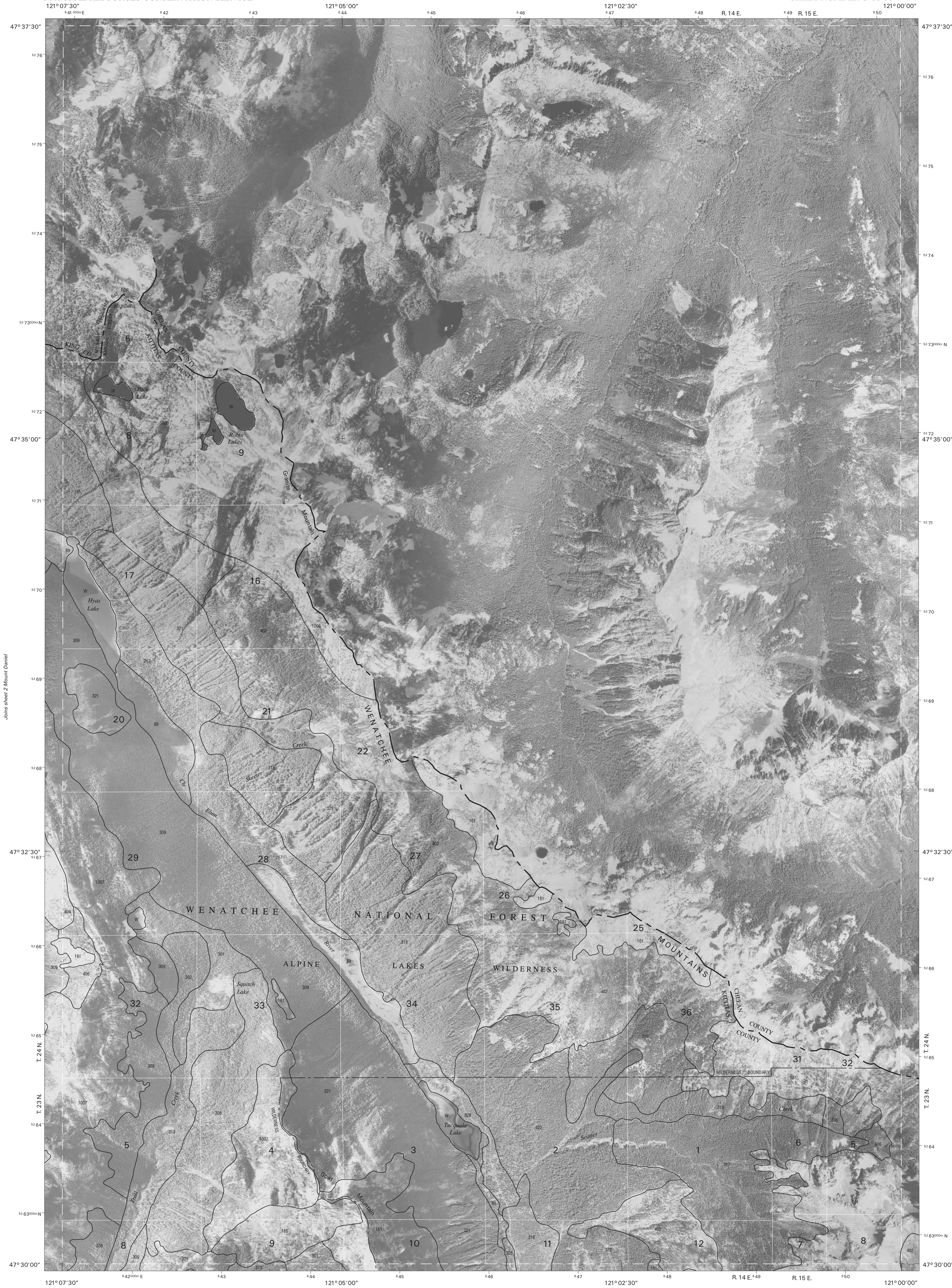


17	18	19	17 RED TOP MOUNTAIN
18	19	20	18 LIBERTY
19	20	21	19 BLEWETT PASS
20	21	22	20 TEANAWAY
21	22	23	21 REEGER CANYON
22	23	24	22 TANEUM CANYON
23	24	25	23 THORP
24	25	26	24 ELLENSBURG NORTH

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Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.



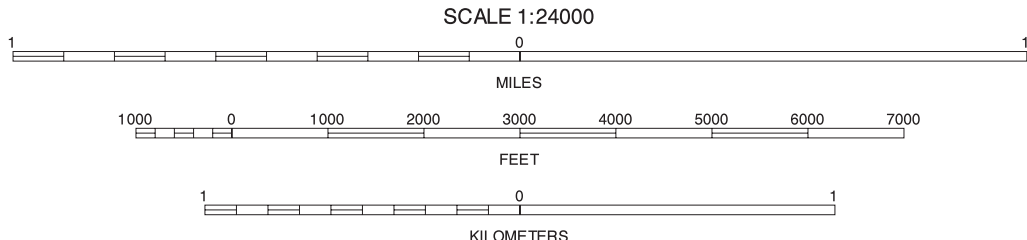
Joins sheet 7
Poleau Ridge

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7	8	9

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Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

Joins sheet 9
Mount Stuart

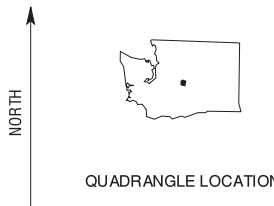


Join sheet 29
Swalk Prairie

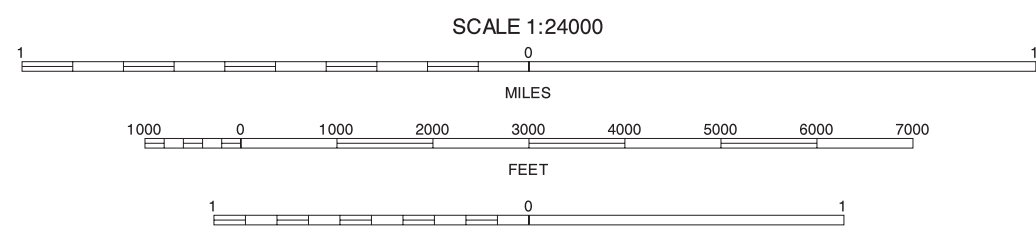
Join sheet 31
Nanum Canyon

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QUADRANGLE LOCATION



18	19	20
29	30	31
39	40	41

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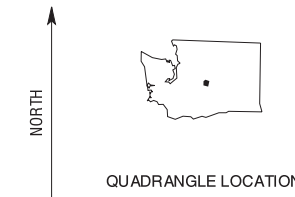
REECER CANYON, WASHINGTON
7.5 MINUTE SERIES
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Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

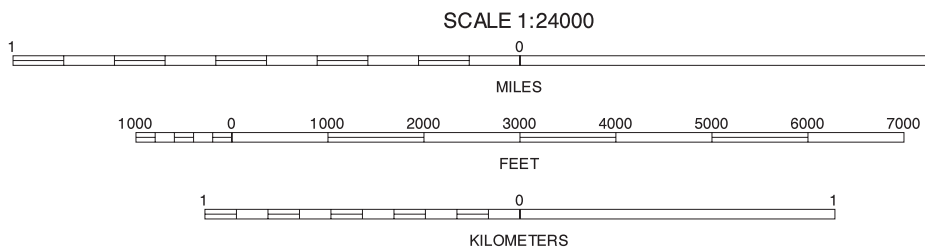


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



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40	41	42

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Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.

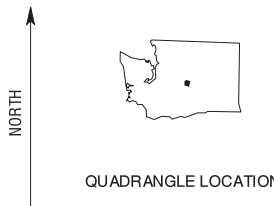


Joins sheet 31 Nanum Canyon

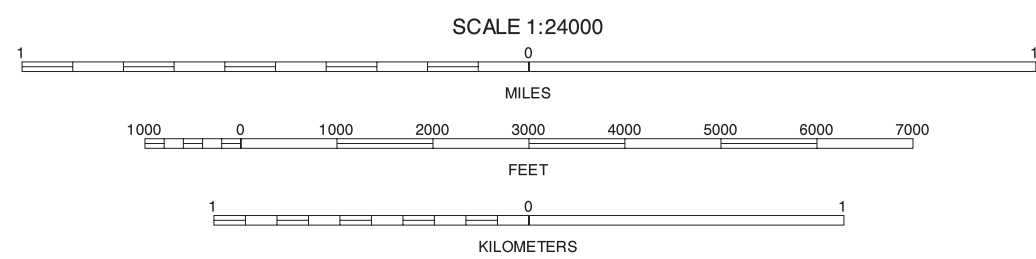
Joins sheet 33 Stray Gulch

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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks. Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



20	21	22	20 MISSION PEAK
			21 WENATCHEE HEIGHTS
			22 MALAGA
31		33	31 NANEUM CANYON
			33 STRAY GULCH
41	42	43	41 COLOCKUM PASS SW
			42 COLOCKUM PASS SE
			43 WHISKEY DICK MOUNTAIN

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Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.

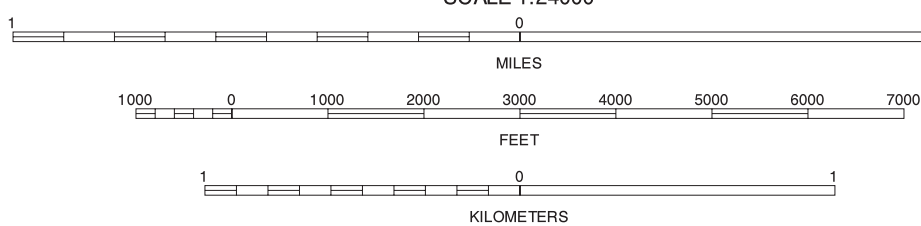


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QUADRANGLE LOCATION



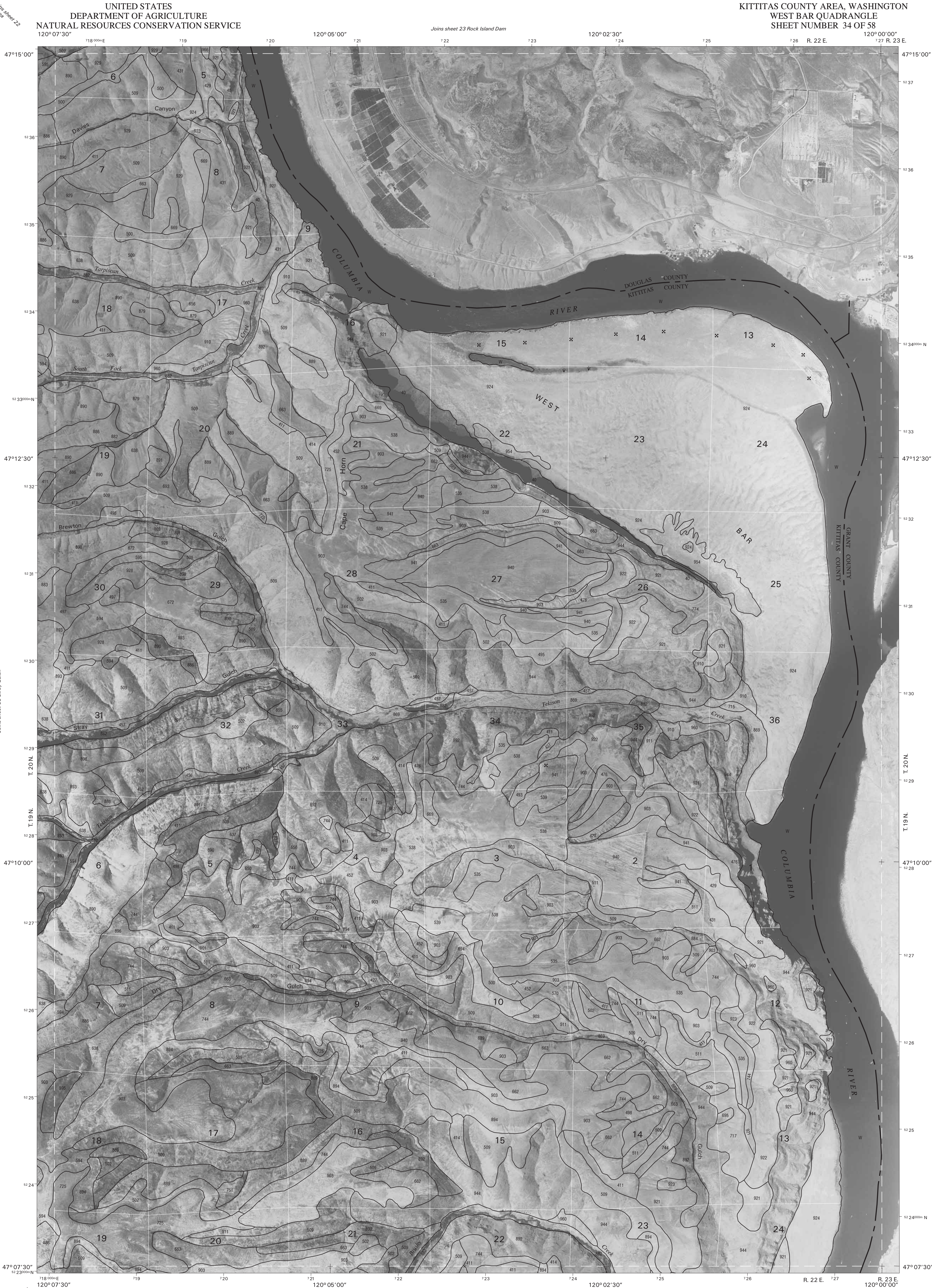
Joins sheet 43 Whiskey Dick Mountain

21	22	23	21 WENATCHEE HEIGHTS
22	23	24	22 MALAGA
23	24	25	23 ROCK ISLAND DAM
24	25	26	24 COLOCUM PASS
25	26	27	25 WEST BAR
26	27	28	26 COLOCUM PASS SE
27	28	29	27 WHISKEY DICK MOUNTAIN
28	29	30	28 CAPE HORN SE

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Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.

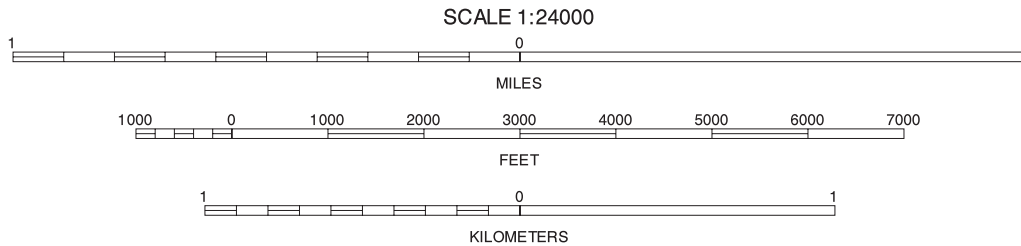


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks. Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



22	23	22 MALAGA
33		23 ROCK ISLAND DAM
43	44	33 STRAY GULCH
		43 WHISKEY DICK MOUNTAIN
		44 CAPE HORN SE

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Soil map delineations extending beyond the dashed white quadrangle neartine are for reference only and are included on adjacent map sheets.

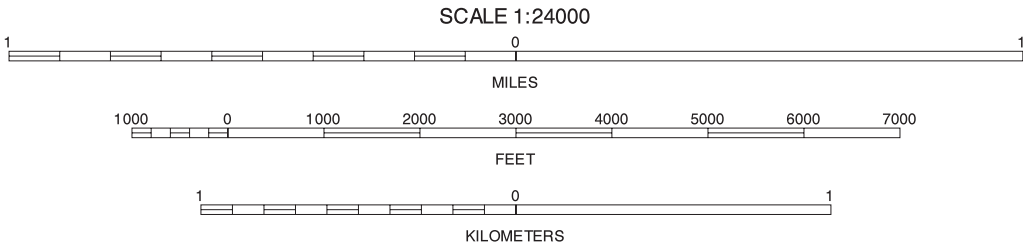


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North American Datum of 1983(NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

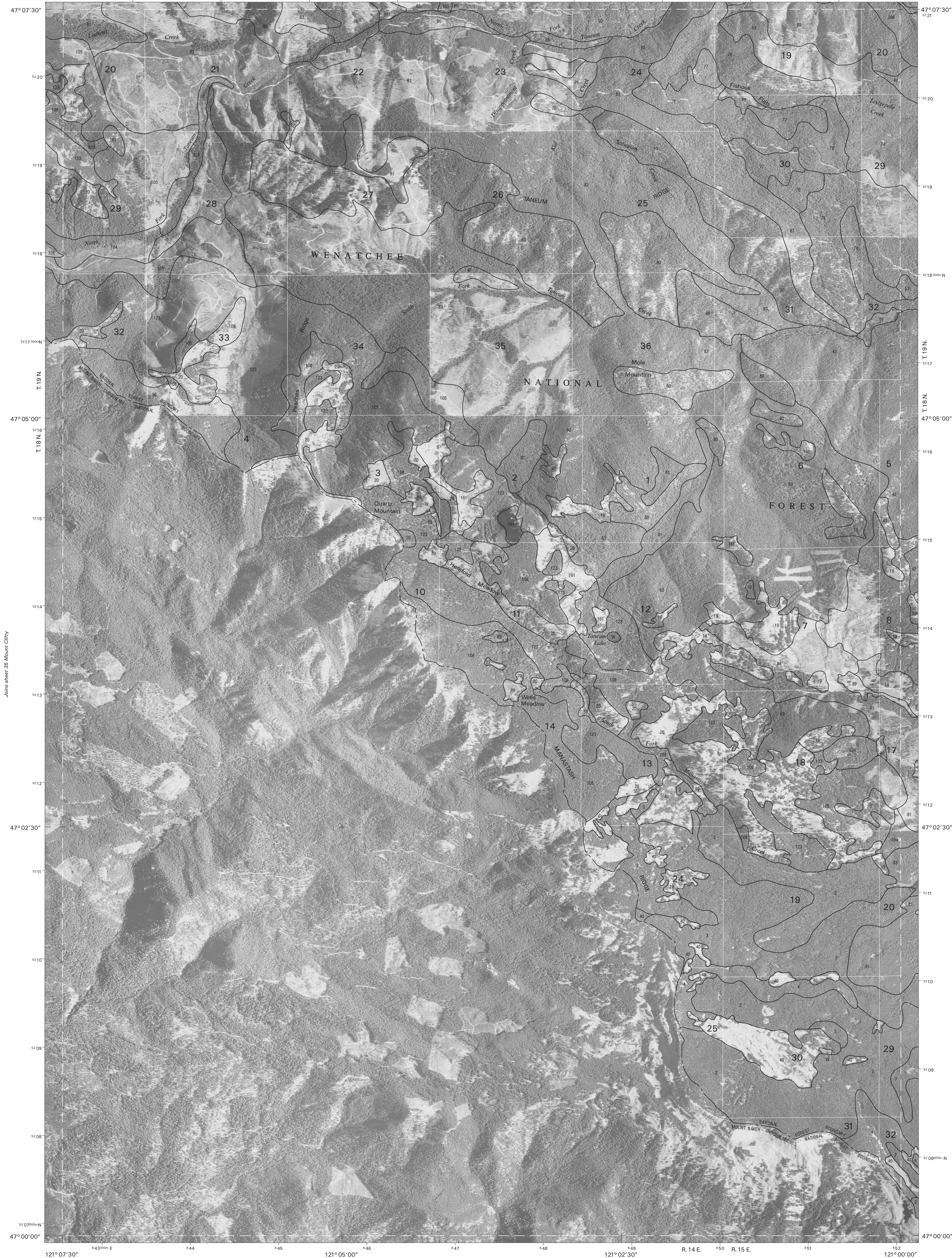


24	25	26	24 BLOWOUT MOUNTAIN
			25 EASTON
			26 RONALD
			36 QUARTZ MOUNTAIN

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MOUNT CLIFTY, WASHINGTON
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SHEET NUMBER 35 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

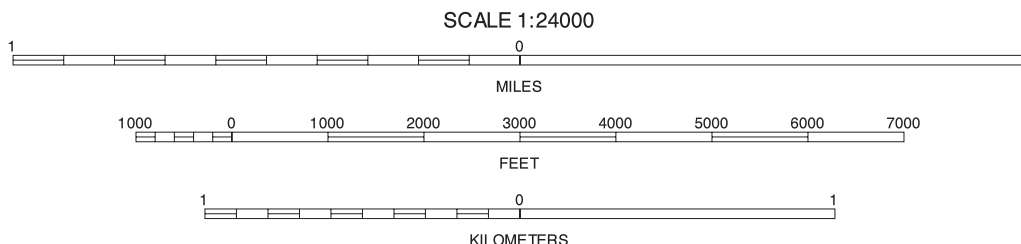


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

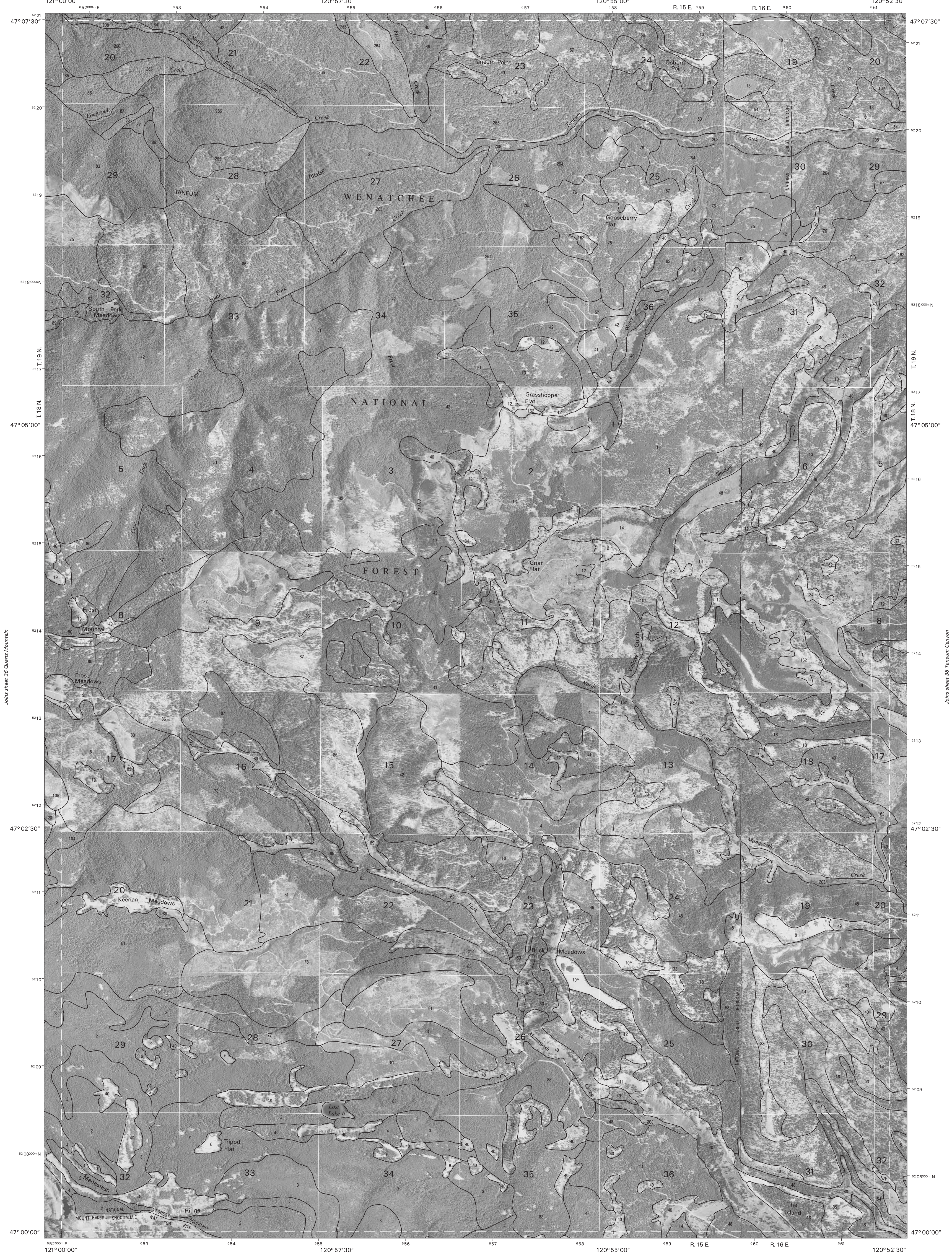


25	26	27
35	36	37
	45	

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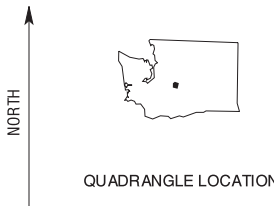
QUARTZ MOUNTAIN, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 36 OF 58

Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.

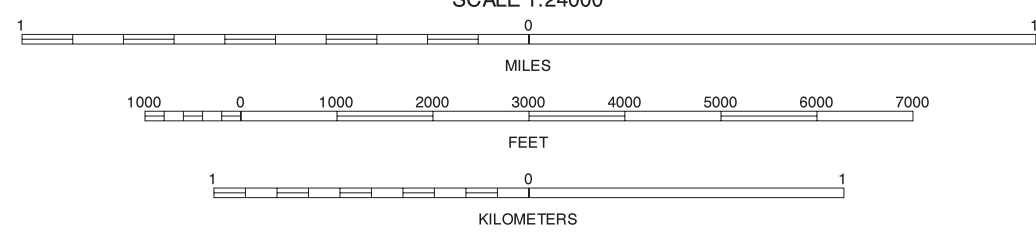


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 2006 aerial photography. Administrative boundaries were acquired from the State of Washington. Boundaries may have been edited to conform with features represented on the publication orthophotography or to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



26	27	28	29
36	37	38	39
45	46	47	48

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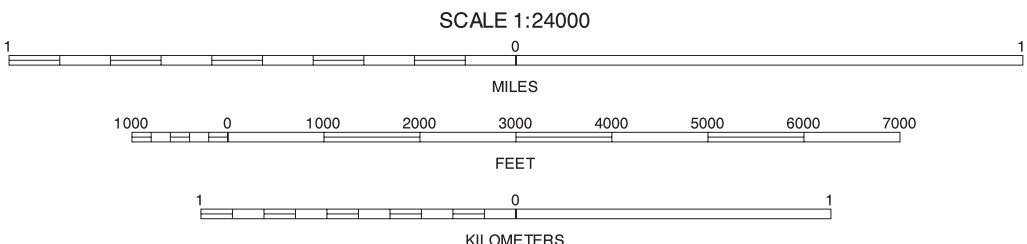
FROST MOUNTAIN, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 37 OF 58

Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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37	38	39
45	46	47

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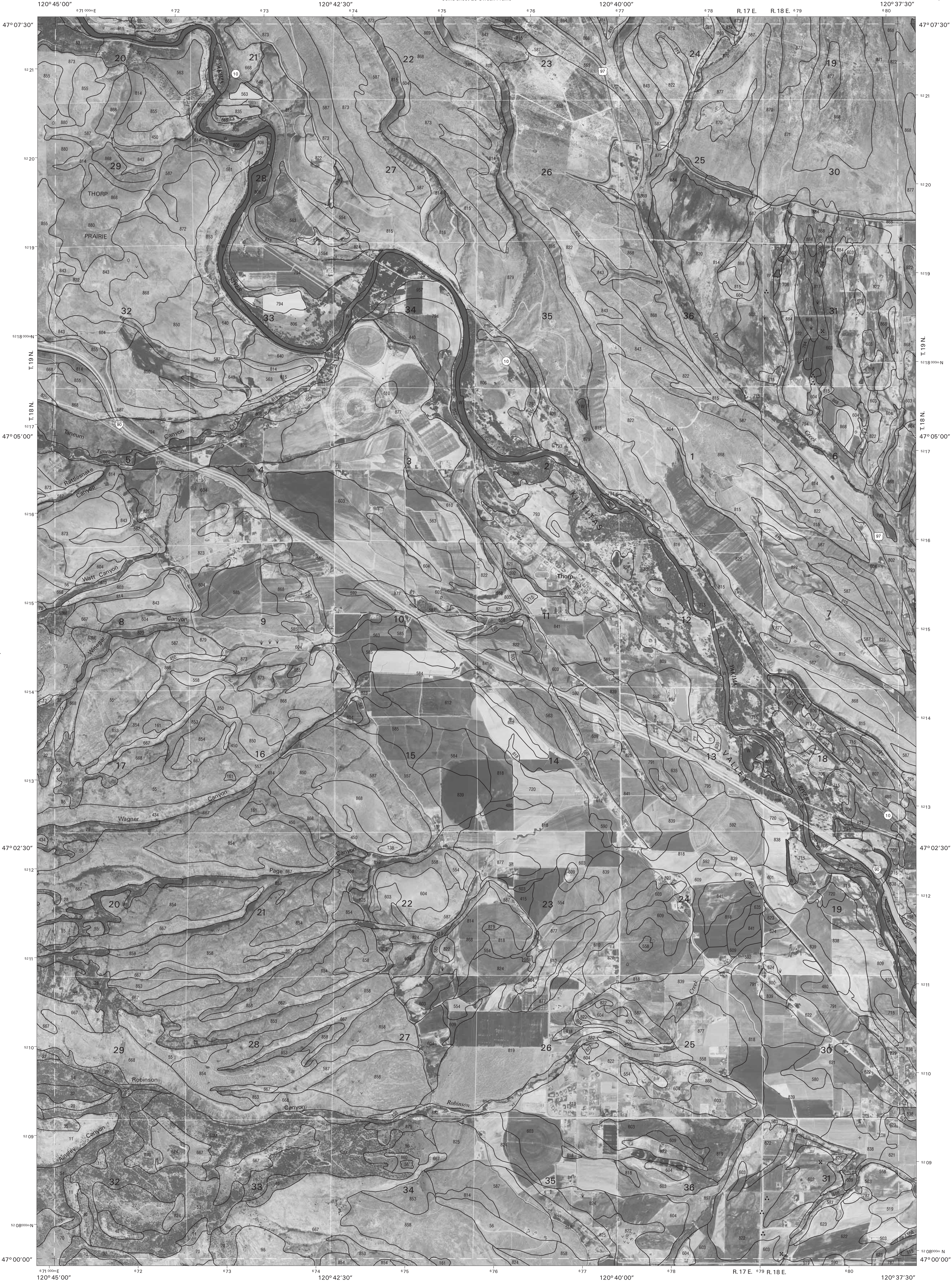
TANEUM CANYON, WASHINGTON
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SHEET NUMBER 38 OF 58

Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

Joins sheet 28
Taneum Canyon

Joins sheet 29 Swauk Prairie

Joins sheet 30
Reecer Canyon



Joins sheet 38 Taneum Canyon

Joins sheet 40 Ellensburg North

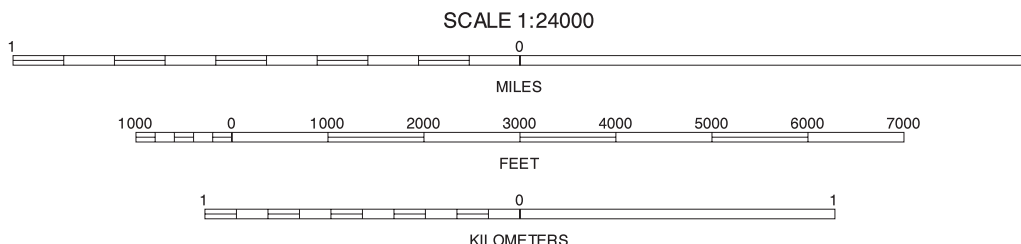
Joins sheet 46
Hudson Creek

Joins sheet 47 Manastash Creek

Joins sheet 48
Ellensburg South

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North American Datum of 1983(NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

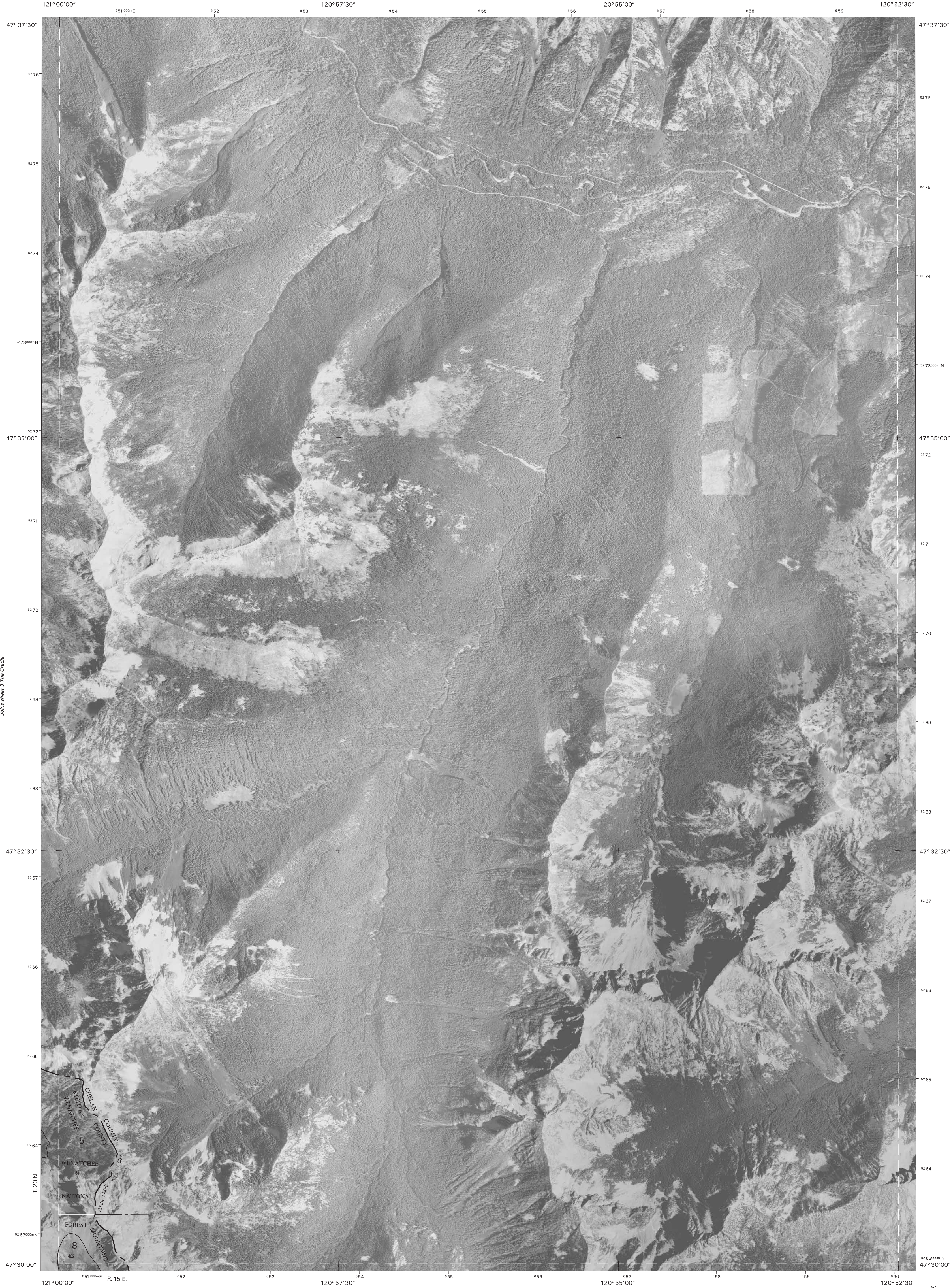


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38	39	40
46	47	48

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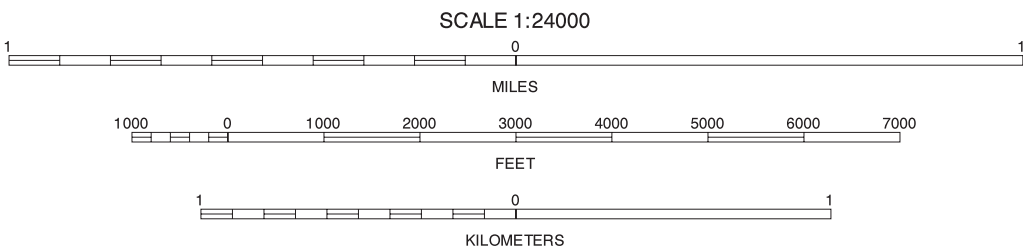
THORP, WASHINGTON
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SHEET NUMBER 39 OF 58

Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983(NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



3		3
8	9	10

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Soil map delineations extending beyond the dashed white quadrangle neartline are for reference only and are included on adjacent map sheets.

Joins sheet 29
Swatow Prairie

Joins sheet 31
Naneum Canyon

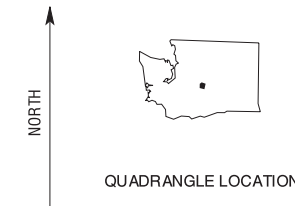


Joins sheet 27
Manastash Creek

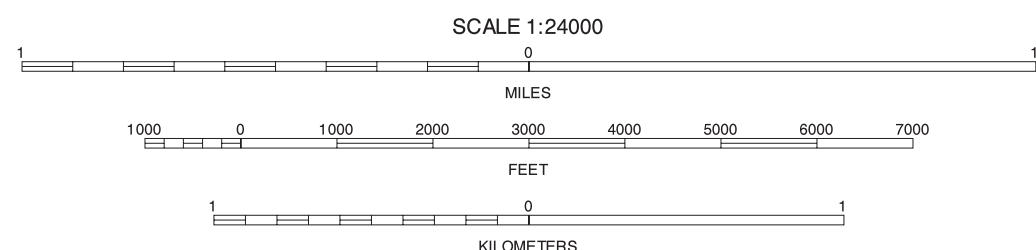
Joins sheet 49
Kittitas

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 2006 aerial photography. Administrative boundaries were acquired from the State of Washington. Boundaries may have been edited to conform with features represented on the publication orthophotography or to enhance the clarity of the soils information.

North American Datum of 1983(NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



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Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.

Joins sheet 30
Reecer Canyon

Joins sheet 32
Colockum Pass

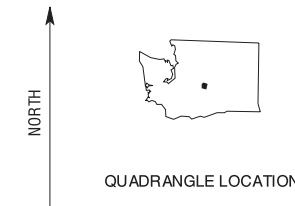


Joins sheet 48
Ellensburg South

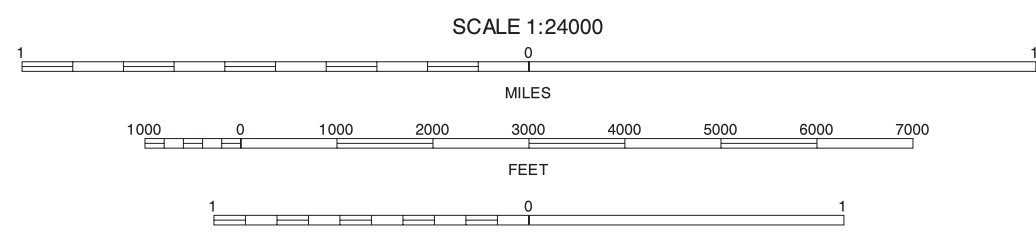
Joins sheet 50
East Kittitas

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 2006 aerial photography. Administrative boundaries were acquired from the State of Washington. Boundaries may have been edited to conform with features represented on the publication orthophotography or to enhance the clarity of the soils information.

North American Datum of 1983(NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



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48	49	50

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Soil map delineations extending beyond the dashed white quadrangle headline are for reference only and are included on adjacent map sheets.

Joins sheet 31
Nanaimo Canyon

Joins sheet 53
Stray Gulch



Joins sheet 41 Colockum Pass SW

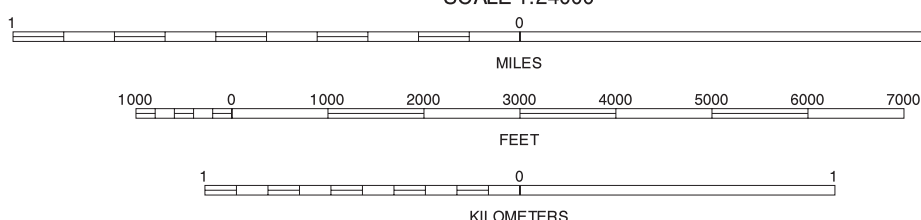
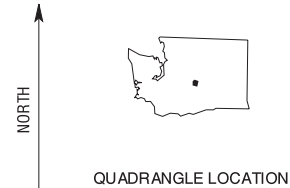
Joins sheet 43 Whiskey Dick Mountain

Joins sheet 49
Kittitas

Joins sheet 51
Boynton

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 2006 aerial photography. Administrative boundaries were acquired from the State of Washington. Boundaries may have been edited to conform with features represented on the publication orthophotography or to enhance the clarity of the soils information.

North American Datum of 1983(NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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41	42	43
49	50	51

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Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

Joins sheet 32
Colockum Pass

Joins sheet 34
West Bar



Joins sheet 42 Colockum Pass SE

Joins sheet 44 Cape Horn SE

Joins sheet 50
East Whiskey

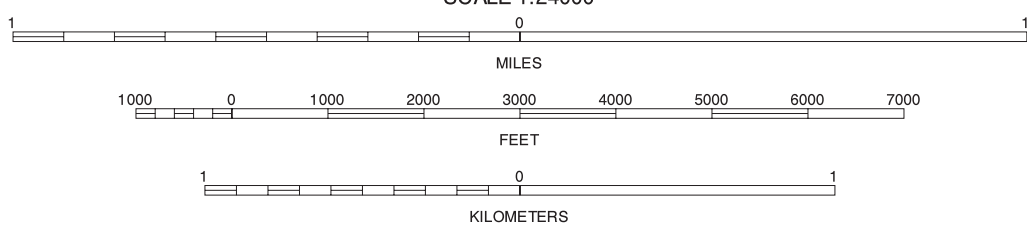
Joins sheet 52
Ginkgo

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 2006 aerial photography. Administrative boundaries were acquired from the State of Washington. Boundaries may have been edited to conform with features represented on the publication orthophotography or to enhance the clarity of the soils information.

North American Datum of 1983(NAD83), GRS90 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

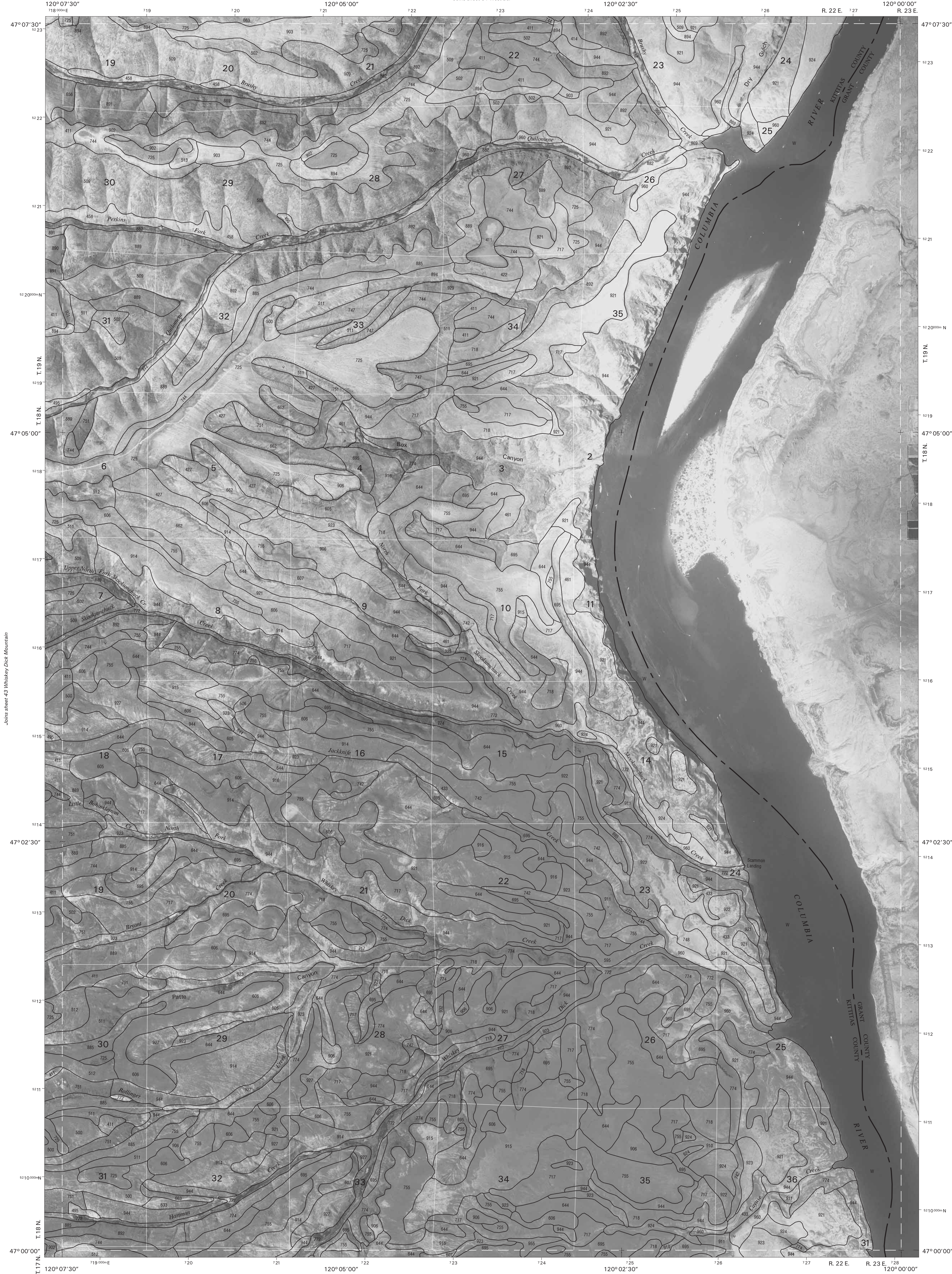


32	33	34
42	43	44
50	51	52

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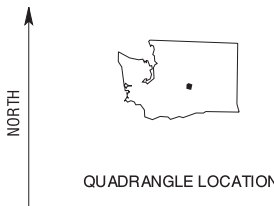
WHISKEY DICK MOUNTAIN, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 43 OF 58

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

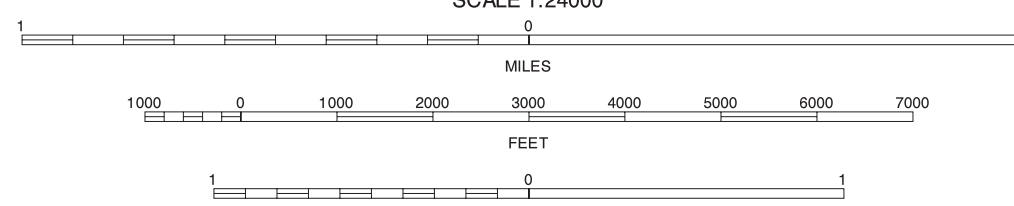


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



33	34	33 STRAY GULCH
43		34 WEST BAR
51	52	43 WHISKEY DICK MOUNTAIN
	53	51 BOYLSTON
		52 GINKGO
		53 VANTAGE

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CAPE HORN SE, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle neatine are for reference only and are included on adjacent map sheets.

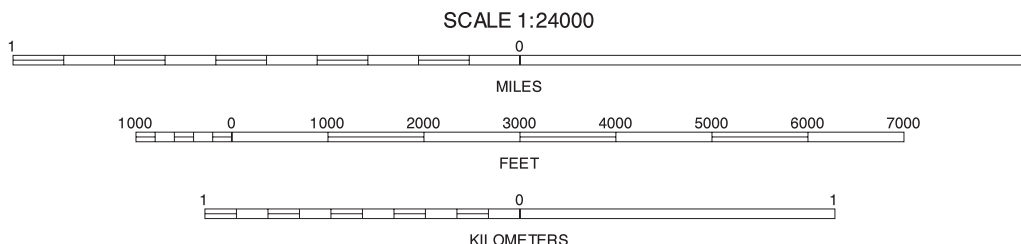


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North American Datum of 1983 (NAD83). GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



36	37	38	36 QUARTZ MOUNTAIN
			37 FROST MOUNTAIN
			38 TANEUM CANYON
		46	46 HUDSON CREEK

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MANASTASH LAKE, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

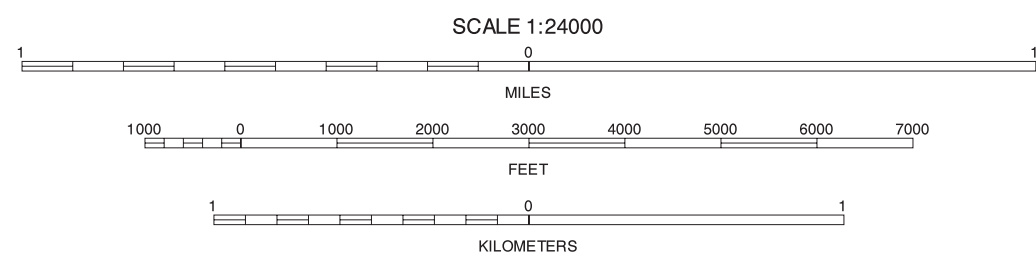


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North American Datum of 1983(NAD83). GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



37	38	39	37 FROST MOUNTAIN
45	46	47	38 TANEUM CANYON
			39 THORP
			45 MANASTASH LAKE
			47 MANASTASH CREEK
		54	54 WENAS LAKE

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HUDSON CREEK, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle nealline are for reference only and are included on adjacent map sheets.

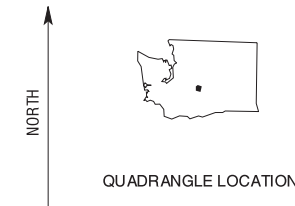
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

KITTITAS COUNTY AREA, WASHINGTON
MANASTASH CREEK QUADRANGLE
SHEET NUMBER 47 OF 58

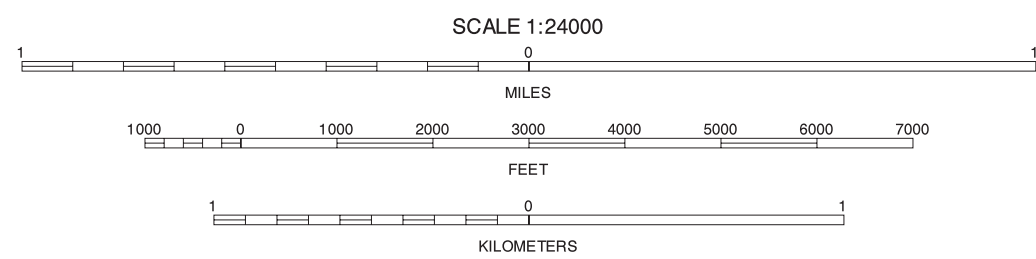


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North American Datum of 1983(NAD83). GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



38	39	40	38 TANEUM CANYON
			39 THORP
			40 ELLensburg NORTH
46		48	46 HUDSON CREEK
			48 ELLensburg SOUTH
	54	55	54 WENAS LAKE
			55 THE COTTONWOODS

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Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

KITTITAS COUNTY AREA, WASHINGTON
ELLENSBURG SOUTH QUADRANGLE
SHEET NUMBER 48 OF 58

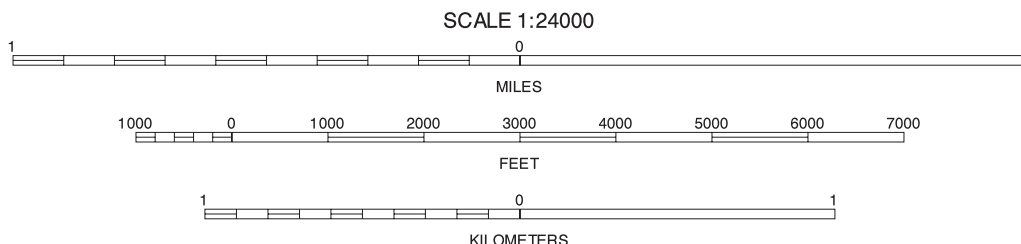


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



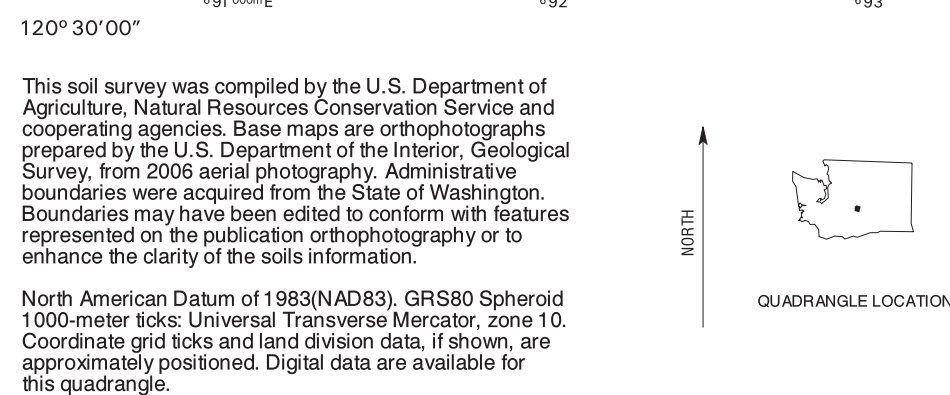
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47		49
54	55	56

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Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

KITTITAS COUNTY AREA, WASHINGTON
KITTITAS QUADRANGLE
SHEET NUMBER 49 OF 58



SCALE 1:24000

0

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000

FEET

1 0 1

KILOMETERS

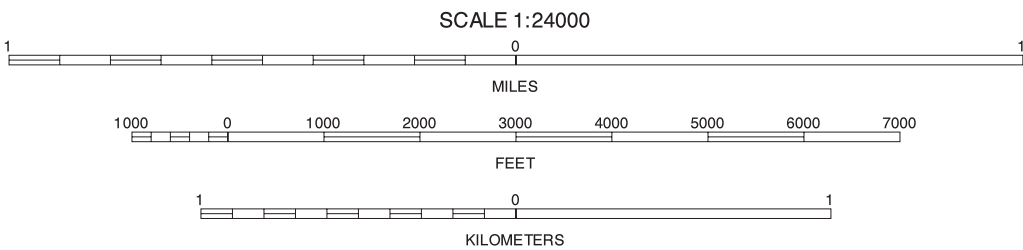
40	41	42	40 ELLENSBURG NORTH
			41 COLOCKUM PASS SW
			42 COLOCKUM PASS SE
48		50	48 ELLENSBURG SOUTH
			50 EAST KITITAS
			55 THE COTTONWOODS
55	56	57	56 WYMER
			57 BADGER GAP

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	1	BIG SNOW MOUNTAIN
6	6	CHIKAMIN PEAK
12	13	LOST LAKE
		STAMPEDE PASS

SNOQUALMIE PASS, WASHINGTON
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 58

Soil map delineations extending beyond the dashed white quadrangle nealline are for reference only and are included on adjacent map sheets.

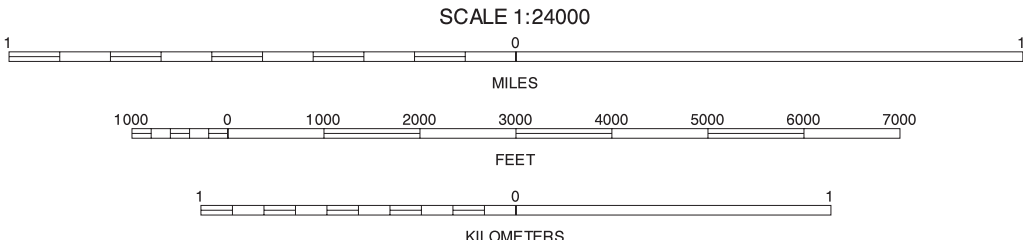


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



41	42	43	41 COLOCKUM PASS SW
			42 COLOCKUM PASS SE
			43 WHISKEY DICK MOUNTAIN
49	50	51	49 KITTITAS
			50 BOYLSTON
			51 WYMER
56	57		56 BADGER GAP

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EAST KITTITAS, WASHINGTON
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Soil map delineations extending beyond the dashed white quadrangle nealline are for reference only and are included on adjacent map sheets.

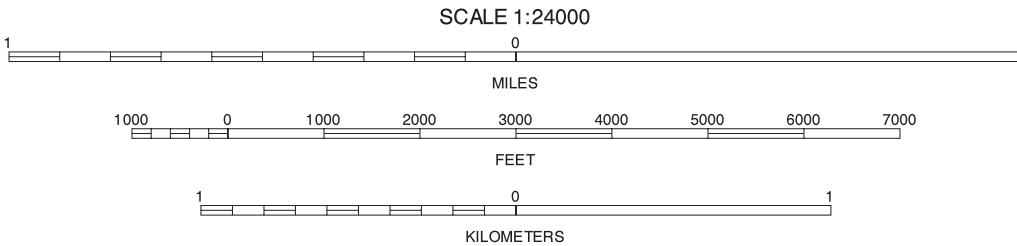


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North American Datum of 1983 (NAD83). GRS80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



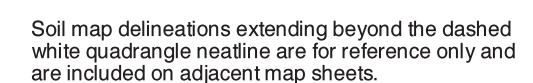
42	43	44
50	51	52
57		

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Soil map delineations extending beyond the dashed white quadrangle neckline are for reference only and are included on adjacent map sheets.

KITTITAS COUNTY AREA, WASHINGTON
GINKGO QUADRANGLE
SHEET NUMBER 52 OF 58



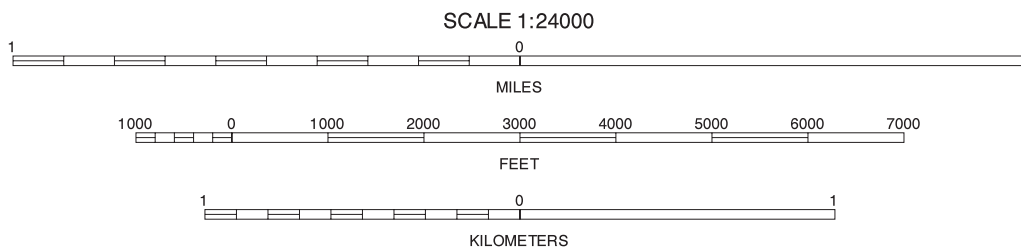


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North American Datum of 1983 (NAD83), GRS80 Spheroid 1000-meter ticks; Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

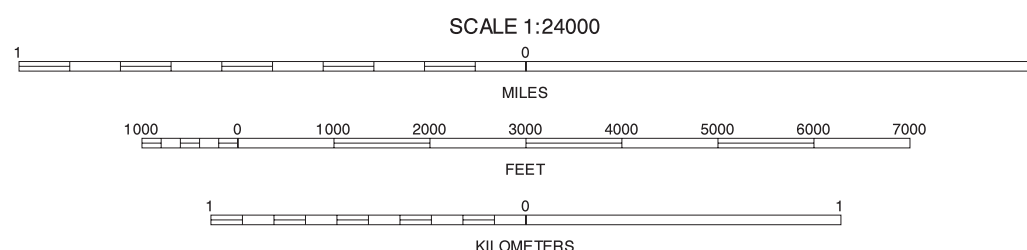
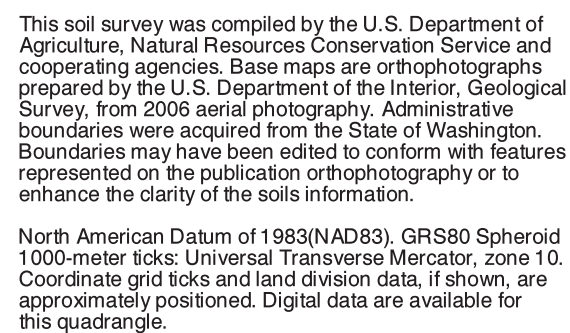


44		44 CAPE HORN SE
52		52 GINKGO

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Soil map delineations extending beyond the dashed white quadrangle neartline are for reference only and are included on adjacent map sheets.



46	47	48	46 HUDSON CREEK
			47 MANASTASH CREEK
			48 ELLENSBURG SOUTH
		55	55 THE COTTONWOODS

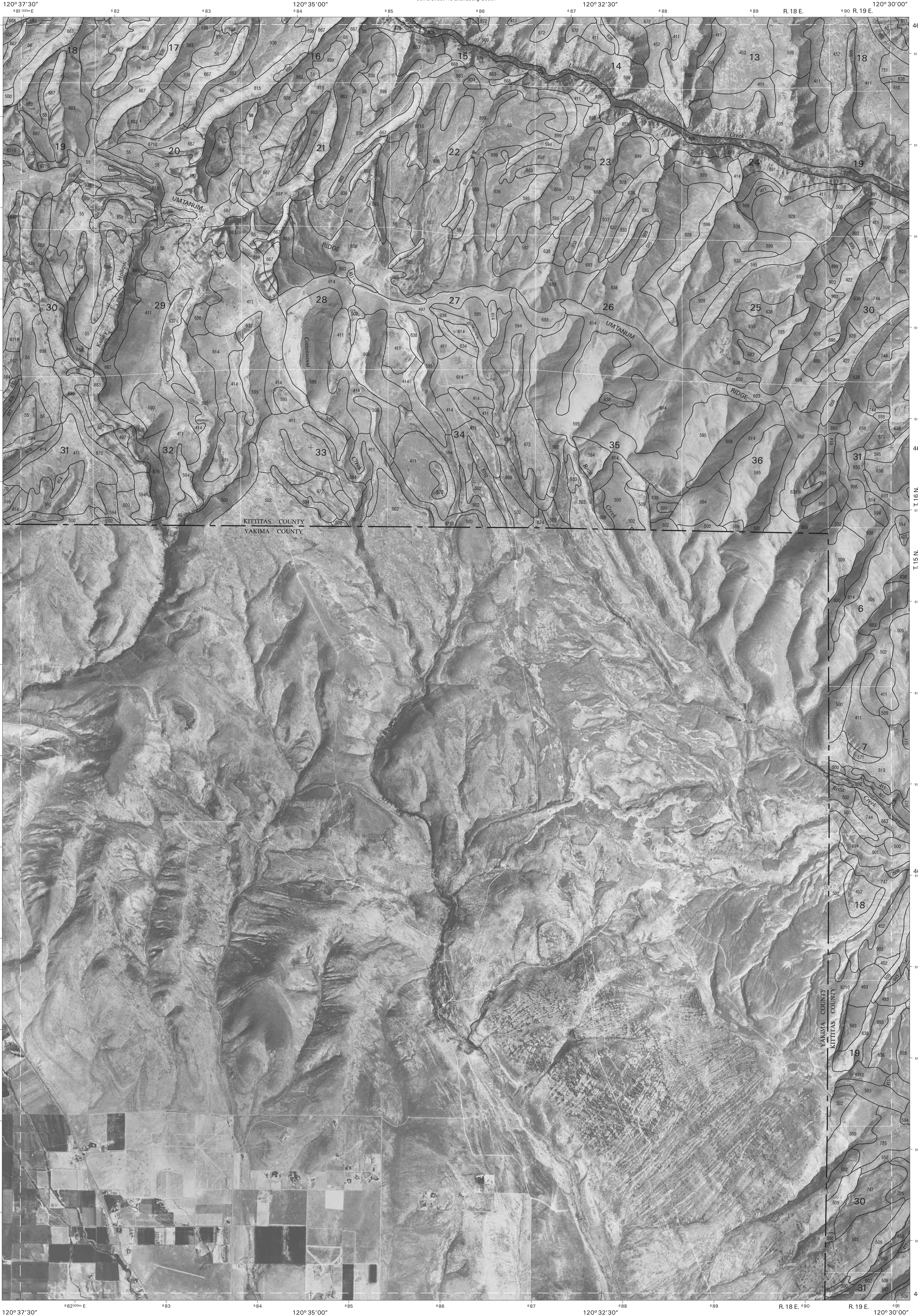
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

KITTITAS COUNTY AREA, WASHINGTON
THE COTTONWOODS QUADRANGLE
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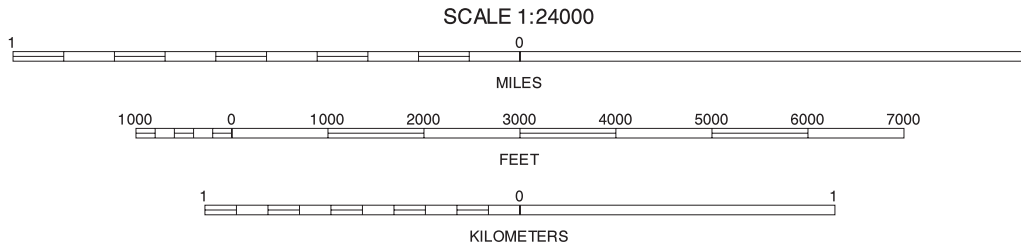


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QUADRANGLE LOCATION



47	48	49	47 MANASTASH CREEK
48			48 ELLENSBURG SOUTH
49			49 KITTITAS
54			54 WENAS LAKE
			56 WYMER
		58	58 POMONA

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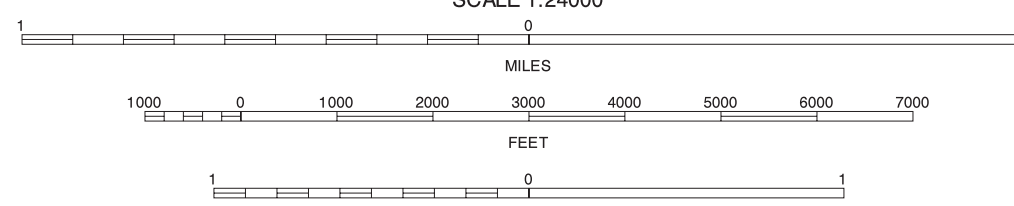
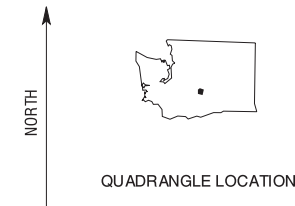
THE COTTONWOODS, WASHINGTON
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48	49	50
55	56	57
	58	

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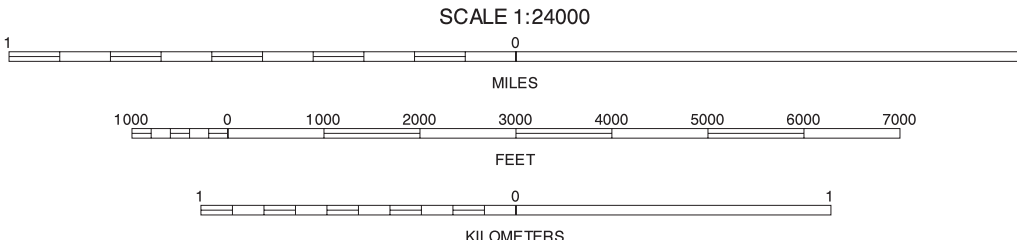


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QUADRANGLE LOCATION

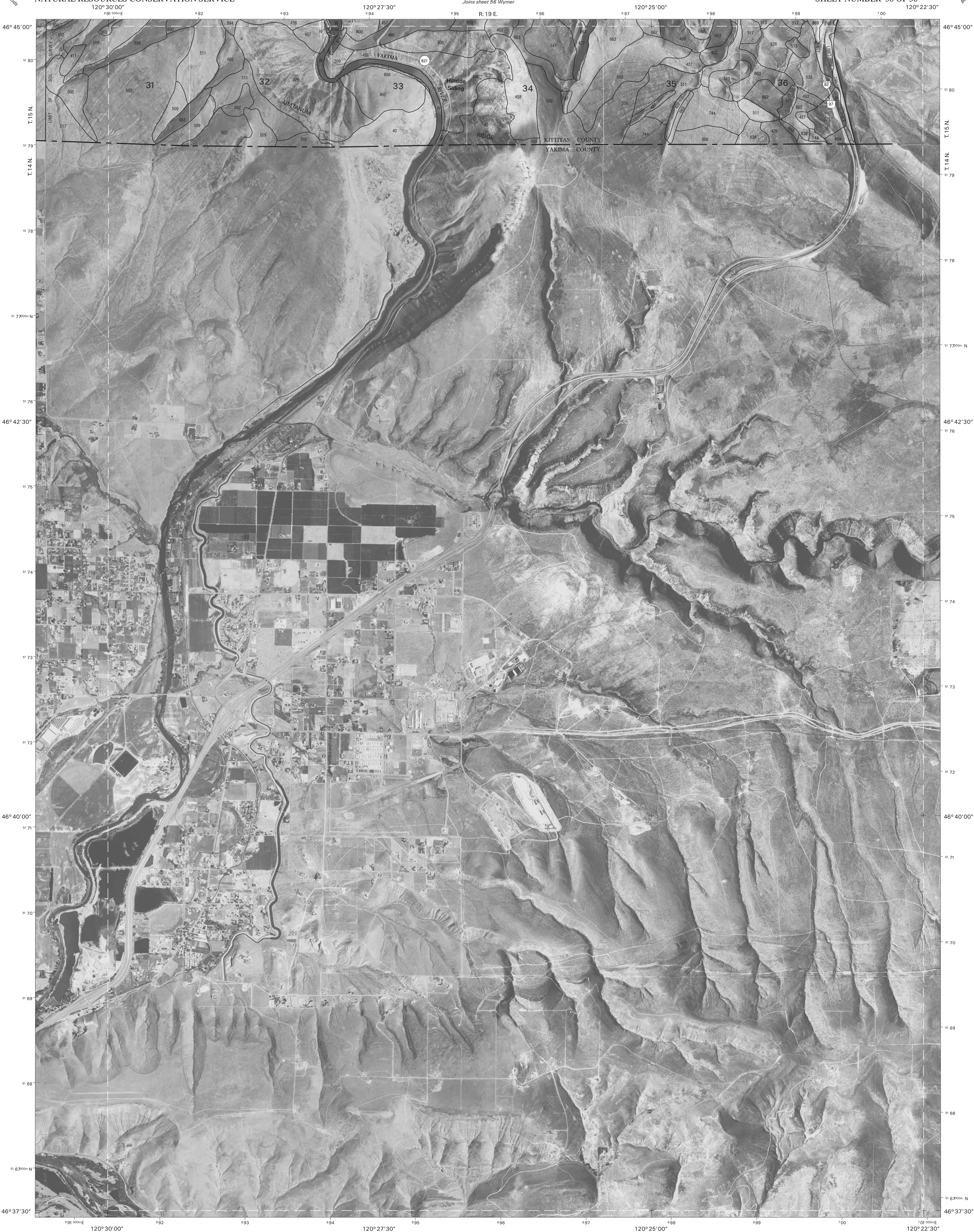


49	50	51	49 KITTTITAS
			50 EAST KITTTITAS
			51 BOYLSTON
56			56 WYMER
			58 POMONA
58			

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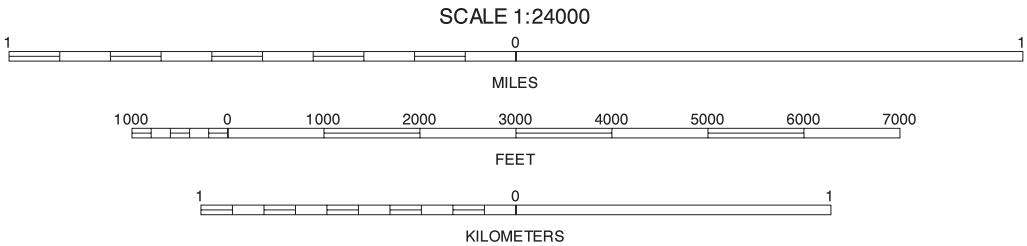


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QUADRANGLE LOCATION



55	56	57
55 THE COTTONWOODS	56 WYMER	57 BADGER GAP

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	1	2	1 BIG SNOW MOUNTAIN
			2 MOUNT DANIEL
5		7	5 SNOQUALMIE PASS
			7 POLALLIE RIDGE
			12 LOST LAKE
12	13	14	13 STAMPEDE PASS
			14 KACHEES LAKE

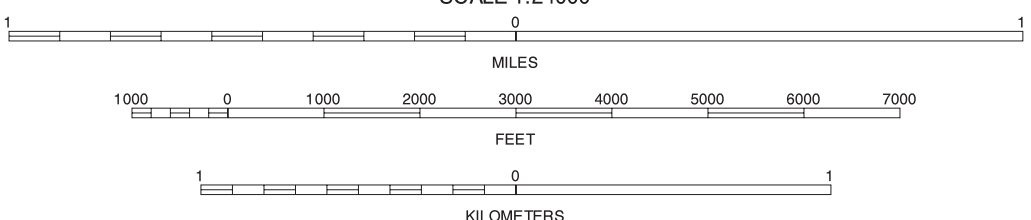
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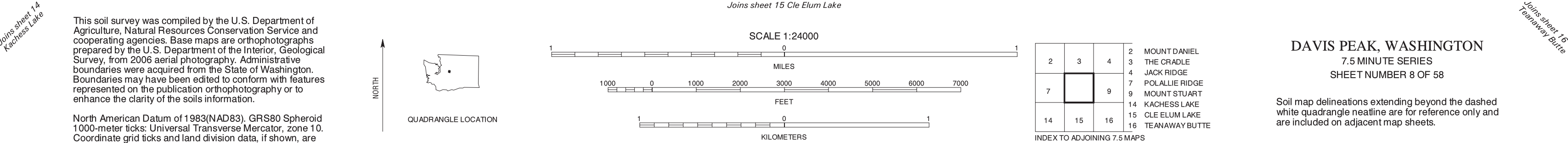


1	2	3
4	5	6
7	8	9
10	11	12
13	14	15

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Soil map delineations extending beyond the dashed white quadrangle nealline are for reference only and are included on adjacent map sheets.



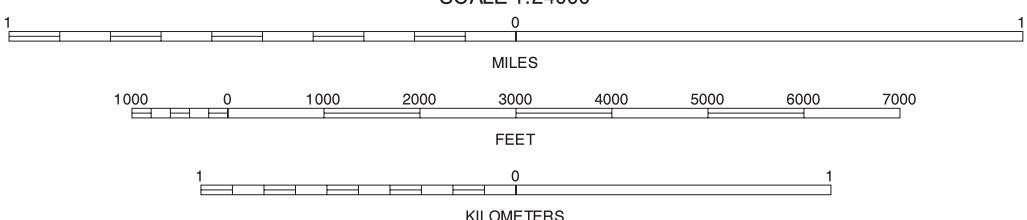


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QUADRANGLE LOCATION



3	4	3 THE GRADLE
8	10	4 JACK RIDGE
15	16	8 DAVIS PEAK
		10 ENCHANTMENT LAKES
		15 CLE ELUM LAKE
		16 TEANAWAY BUTTE
		17 RED TOP MOUNTAIN

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